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MASTRAN SAMPLE PROBLEM COMPUTER OUTPUT, (U)
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DAVID W. TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER



Bethesda, Maryland 20084

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NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT

by

Gordon C. Everstine & Myles M. Hurwitz

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NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT

Computation, Mathematics, & Logistics Department
Departmental Report

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February 1981

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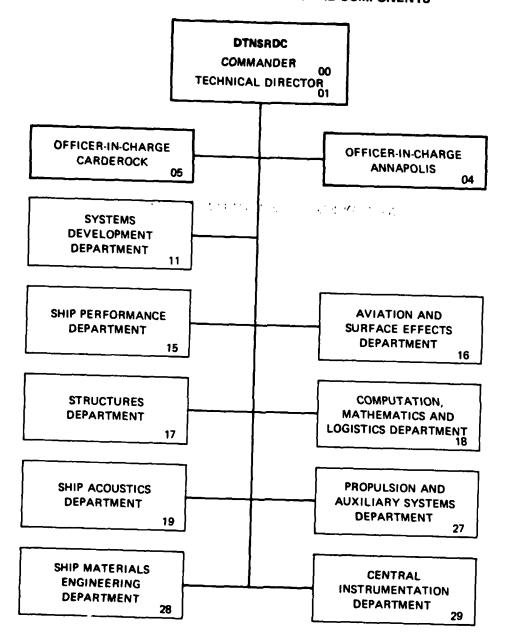
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AD-A096 867 DTNSRDC/CMLD-81-04 \$ TITLE (and Subtitle) TYPE OF REPORT & PERIOD COVERED NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT 6. PERFORMING ORG, REPORT NUMBER 8. CONTRACT OR GRANT NUMBER(+) Æverstine **age** Myles M./Hurwitz 9. PERFORMING ORGANIZATION NAME AND ADDRESS PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS Program Element 65861N David W. Taylor Naval Ship R&D Center Task Area Z0832-SL Bethesda, Maryland 20084 Work Unit 1-1844-119 11. CONTROLLING OFFICE NAME AND ADDRESS REPORT DATE February 1981 NUMBER OF PAGES 417 14. MONITORING AGENCY NAME & ADDRESS(II different from Controlling Office) 15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE 16. DISTRIBUTION STATEMENT (of this Report) Accession For NTIS GRA&I Approved for Public Release: Distribution Unlimited 16 20832 . Th Unantimation Justification -17. DISTRIBUTION STATEMENT (of the 1:1: 20132-56 18. SUPPLEMENTARY NOTES 19. KEY WORDS (Continue on reverse side if necessary and identify by block number) NASTRAN 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This is a compilation of computer output for 23 sample problems illustrating the basic capabilities of the NASTRAN structural analysis computer program. These problems are used primarily in NASTRAN training courses. Problem descriptions appear in a companion report DTNSRDC/CMLD-81-05.

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NASTRAN COURSE --- DEMO. PROB. 1 CANTILEVER BEAM WITH TRANSVERSE POINT LOAD 5/8-INCH DIAMETER STEEL BEAM

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CARD

TITLE=NASTRAN COURSE -- - DEMO. PROB. 1
SUBTITLE=CANTILEVER BEAM WITH TRANSVERSE POINT LOAD
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\$ THE NEXT TWO CARDS SPECIFY CONSTRAINTS AND APPLIED LOADS.
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\$ BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

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NASTRAN COURSE - - - DEMO. PROB. 1 CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

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*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

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3100	-28488 C MAX = 5 PCMAX = 0 PC GROUPS =

MPYAD--NULL MATRIX PRODUCT METHOD 1 NT,NBR PASSES = 1,EST. TIME =

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NASTRAN COURSE - - - DEMO. PROB. 1 CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5/8-INCH DIAMETER STEEL BEAM

*** USER INFORMATION MESSAGE 3035

1 EPSILON SUB E = -6.6594084E-10 FOR LOAD

MPYAD--NULL MATRIX PRODUCT METHOD 1 T ,NBR PASSES = 1.EST. TIME =

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NASTRAN 12/15/80

FEBRUARY 9, 1981

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ELEMENT-TYPE = BAR + TOTAL FOR ALL TYPES = 5.0069382E+00

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ELEMENT-ID	STRAIN-ENERGY	PERCENT OF TOTAL
-	9.36080.1E-01	18.6957
2	8.114698E-01	16.2069
က	6.957600E-01	13.8959
7	5.88950~E-01	11.7627
5	4.91042~E-01	9.8072
9	4.0203506-01	8.0296
	3.21 .282E-01	6.4296
ю	2.507222E-01	5.0075
თ	1.884169E-01	3.7631
10	1.350122E-01	2.6965
=	9.0508545-02	1.8077
12	5.470551E-02	1.0966
13	2.820324E-02	.5633
14	1.0401735-02	7702.
15	1.500970E-03	0080.
16	4.064766E-21	0000.
17	-4.772115E-11	0000.1
18	-6.921388E-11	0000
61	4.553545E-11	0000.
20	-1.129279E-11	0000.1

NASTRAN COURSE - - - DEMO, PROB. 1 CANTILEVER BEAM WITH TRANSVERSE POINT

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CANTILEVE	5/8-INCH		POINT-ID		ოოო	សល្ស	~~~	777	សិសិសិ	17	0 0 0	2.5

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NASTRAN COURSE --- DEMO. PROB. 1 CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5/8-INCH DIAMETER STEEL BEAM

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	-	14.5	14.5	14.5	14.5	14.5	14.5	
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ELEMENT PRECISION CHECK SIGNIFICANT DIGITS FOR SUBCASE = 1, 30 = LOAD	TYPE	BAR	BAR	BAR	ВАЯ	ВАЯ	848	

*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2077, SDR2 DUTPUT DATA BLOCK NO. 2 IS PURGED

*** USER WARNING MESSAGE 2078, SOR2 OUTPUT DATA BLOCK NO. 3 IS PURGED

*** SYSTEM WARNING MESSAGE 3001

ATTEMPT TO OPEN DATA SET 205 IN SUBROUTINE SDR2 , WHICH WAS NOT DEFINED IN THE FIST

PAGE

NASTRAN COURSE - - - DEMO. PROB. 1 CANTILEVER BEAM WITH TRANSVERSE POINT

CANTILEVER	BEAM WITH	TRANSVERSE	POINT LOAD				
5/8-INCH DIAMETER	DIAMETER	STEEL BEAM					
			01596	ACEMENT	VECTOR		
POINT 10.	TYPE		12	13	2	R2	R S
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7	g	1.629726E-06	-1.632559E-02	0.0		0.0	-6.453049E-03
ო	U	3.259452E-06		0.0			-1.246106E-02
4	IJ	4.889179E-06	-1.432395E-01	0.0	0.0	0.0	-1.802403E-02
S	g	6.518905E-06	-2,431755-01	0.0			-2.314197E-02
9	ပ	8.148631E-06	-3.709025E-01	0.0		0.0	-2.781486E-02
7	O	9.778357E-05	-5.2073988-01	0.0		0.0	-3.204272E-02
60	IJ	1.140838E-05	-6, 10-0318-01	0.0		0.0	-3.582555E-02
6	O	1.303731E-05	-8.7-2.5-2E-01	0.0		0.0	-3.916333E-02
9	'n	1.466784E-05	-1.081510E+60	0.0		0.0	-4.205507E-02
Ξ	ပ	1.629726E-05	-1.2 W8102E+00	0.0		0.0	-4.450378E-02
12	U	1.792699E-05	-1.525821E+00	0.0	0.0	0.0	-4.650645E-02
13	ပ	1.955671E-05	-1.7t.2440f +00	0.0		0.0	-4.806409E-02
4	IJ	0	-2.005735E+00	0.0		0.0	-4.917668E-02
15	IJ	2.281617E-05	-2.2534805+00	0.0		0.0	-4.984424E-02
16	()	2.444589E-05	-2.503451£+00	0.0		0.0	-5.006676E-02
17	IJ	2.444589E+05	-2.7537856+00	0.0		0.0	-5.006676E-02
1.8	()	2.444589E-05	-3.004118E+00	0.0		0.0	-5.006676E-02
19	g	2.444589E-05	-3.254452£+00	0.0	0.0	0.0	-5.006676E-02
50	O	2.444589E-05	-3.504786E+00	0.0	0.0	0.0	-5.006676E-02
21	IJ	2.444589E-05	-3.755120E+00	0.0	0.0	0.0	-5.006676E-02

NASTRAN COURSE - - - DEMO. PROB. 1 CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

NASTRAN 12/15/80 FEBRUARY 9, 1981

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PAGE

5/3-INCH DIAMETER STEEL BEAM

0.0 ã 0.0 VECTOR 33 L O A D 3.000000E+00 -4.000000E+00 0.0 TYPE G POINT ID.

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NASTRAN COURSE - - - DEMO. PROB. 1 CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

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NASTRAN 12/15/80

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5/8-INCH DIAMETER STEEL BEAM

CONSTRAINT SINGLEIPOINT 0 FORCES

R3 3.000000E+02 8 0.0 2 0.0 13 -3.000000E+00 4.000000E+00 0.0 POINT ID. TYPE

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7		0.0	-1.500 8+02 0.0	-4.000ut38+00 0.0	3.000000 + 00	0.0
'n		0.0	-1,40,0005+12 0.0	-4.00000E+00 0.0	3.00000E+00	٥. ن
ტ	-1.400.008.02 C	0.0	20.00.6.e+02 0.0	-4.000000E+00 0.0	3.0000000-00	<u>o</u> .o
5		0.0	-1.00000, E+02 0.0	-4.000000E+00 0.0	3.00000CE+C0	0.0
Ξ	-1.000300E+02 0	0.0	-8.00c0; £+01 0.0	-4.COCCOOE + 00 0.0	3. CO0000E+00	<u>o</u> .
12	-8.000000E+01 0	0.0	-6.000000000000000000000000000000000000	-4.000005+00 0.0	3.00000E+00	0.0
£.	-6.0ccccct+01 0	0.0	-4.000000E+01 0.0	-4.000000E+00 0.0	3.00000E+00	<u>o</u> .o
4		0.0	-2.0C0000E+01 0.0	-4.300000E+00 0.0	3.00000E+00	<u>o</u> .o
15	-2.0000000101 0	0.0	2.44:722E-08 0.0	14.0000E+00 0.0	3.0000000000	0.0
10	2.2351746-08 0	0.0	1.0530 0.E-08 0.0	1.164153E-C9 0.0	-2.273737E-13	<u>o</u> .
17	1.4901168-03 0	0.0	9.0803 JE-09 6.0	1.1641536-09 0.0	-2.273737E-13	<u>o</u> .o
18	7.450581E-09 0	0.0	6.286427E-09 0.0	2.328306E-10 0.0	0.0	0.0
9	3.725290E-09 0	0.0	3.725290E-09 0.0	0.0	0.0	<u>o</u> .
2	1 A63645F-09 0	0	-4 656613F-10 0 0	4 656613F-10 0 0	•	0

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5/8-INCH DIAMETER STEEL BEAM

ELEMENT IO.	5 1 4 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	S T R E 5 SA2 SB2	S S E S I N SA3 SB3	B A R E L E SA4 SB4	MENTS AXIAL STRESS	(C B A R) SA-MAX SB-MAX	SA-MIN SB-MIN	M.S T
-	1,251669E+04 1,168224E+04	-1.251669E+04 -1.168224E+04	00.0	00.	9.778357E+00	1.252647E+04 1.169202E+04	-1.250691E+04 -1.167246E+04	
0	1.168224E+04 1.084780E+04	-1.168224E+04 -:.084780E+04	0.0	00	9.778357E+00	1.169202E+04 1.085758E+04	-1.167246E+04 -1.083802E+04	
ო	1.084780E+04	-1.084780E+04 -1.001335E+04	0.0	0.0	9.778357E+00	1.085758£+04 1.002313£+04	-1.083802E+04 -1.000357E+04	
4	1.001335E+04 9.178905E+03	-1.001335E+04 -9.178905E+03	0.0	00	9.778357E+00	1,002313E+04 9,188684E+03	-1.000357E+04 -9.169127E+03	
S	9.178905E+03 8.344459E+03	-9.178905E+03 -8.344459E+03	0.0	000	9.778357E+00	9.188684E+03 8.354238E+03	-9.169127E+03 -8.334681E+03	
9	8.344159E+03 7.510013E+03	-8.344459E+03 -7.510013E+03	0.0	0.0	9.776357E+00	8.354238E+03 7.519792E+03	-8.334681E+03 -7.500235E+03	
7	7.510013E+03 6.675567E+03	-7.510013E+03 -6.675567E+03	0.0	00	9.778357E+00	7.519792E+03 6.685346E+03	-7.500235E+03 -6.665789E+03	
œ	6.675567E+03 5.841121E+03	-6.675567E+03 -5.841121E+03	0.0	00	9.778357E+00	6.685346E+03 5.850900E+03	-6.665789E+03 -5.831343E+03	
6	5.841121E+03 5.006676E+03	-5.841121E+03 -5.006676E+03	0.0	00.0	9.778357E+00	5.850900E+03 5.016454E+03	-5.831343E+03 -4.996897E+03	
0	5.006576E+03 4.172230E+03	-5.006676E+03 -4.172230E+03	0.0	00.0	9.778357E+00	5.016454E+03 4.182008E+03	-4.996897E+03	
<u>-</u>	4.172230E+03 3.337784E+03	-4.172230E+03 -3.337784E+03	0.0	00.0	9.778357E+00	4.182008E+03 3.347562E+03	-4,162451E+03 -3,328005E+03	
2	3.337784E+03 2.503338E+03	-3.337784E+03 -2.503338E+03	0.0	0.0	9.778357E+00	3.347562E+03 2.513116E+03	-3.328005E+03 -2.493559E+03	
13	2.503338E+03 1.669892E+03	-2.503338E+03 -1.668892E+03	0.0	0.0	9.778357E+00	2.513116E+03 1.678670E+03	-2.493559E+03 -1.659113E+03	
4	1.668892E+03 8.344459E+02	-1.668892E+03 -8.344459E+02	0.0	00.0	9.778357E+00	1.678670E+03 8.442243E+02	-1.659113E+03 -8.246676E+02	
2	8.344459E+02 -1.019994E-06	-8.344459E+02 1.019994E-06	0.0	00	9.778357E+00	8.442243E+02 9.778358E+00	-8.246676E+02 9.778356E+00	
9	-9.325660E-07 -6.897103E-07	9.325660E-07 6.897103E-07	0.0	0.0	-7.4111375-13	9.325653E-07 6.897095E-07	-9.325667E-07 -6.897110E-07	

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NASTRAN COURSE - - - DEMO. PROB. 1 CANTILEVER BEAM WITH TRANSVERSE POINT LOAD

5/8-INCH DIAMETER STEEL BEAM

					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
ELEMENT ID.	SA1 SB1	SA2 SA2 SB2	5 K E S S E S A B K E L E M E N 5 5 5 5 5 5 5 5 5	8 # K E L SA4 SB4	EMENIS AXIAL STRESS	SA-MAX SB-MAX	SA-MIN SB-MIN	M.S1
11	-6.217107E-07 -3.788549E-07	6.217107E-07 0.0 3.788549E-07 0.0	0.0	00	-7.411137E-13	6.217099E-07 3.788542E-07	6.217099E-07 -6.217114E-07 3.788542E-07 -3.788557E-07	
18	-3.108553E-07 -2.622842E-07	3.108553E-07 2.622842E-07	0.0	0.0	0.0	3.108553E-07 2.622842E-07	3.108553E-07 -3.108553E-07 2.622842E-07 -2.622842E-07	
6	-1.554277E-07 -1.554277E-07	1.554277E-07 0.0 1.554277E-07 0.0	0.0	00	0.0	1.554277E-07 1.554277E-07	1.554277E-07 -1.554277E-07 1.554277E-07 -1.554277E-07	
50	-7.771383E-08	7.771383£-08 0.0 -1.942846E-08 0.0	0.0	0.0	0.0	7.771383E-08	7.771383E-08 -7.771383E-08	

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- 12/15/80 SYSTEM GENERATION DATE

RIGID FORMAT SERIES P Z Z Z Z Z Z Z Z MWMWMM MMNINM MMMIM MMMM CDC CYBER SERIES MODEL 173 LEVEL 17.5.7 NWWW MWWW MMMM MMMMMM MINIME MMMM MUNN MWM MM MMM MUUUM MIMIMIM MM Σ MMM Σ MWM MMM MINIMININ STAMMEN M MMM MANAGEMENT TO THE WAY OF THE TOTAL PROPERTY OF THE PROPERTY OF MENTION OF THE PROPERTY OF THE маметелевизметелекталегелетический мы----метелетичественный политичественный починальным починальным выпут WILLIAM CONTROLLE CONTROLL DESIGNATION OF THE PROPERTY OF MERN WERM NUMBER OF STREET MARKATAL W MERMINATIN MUNICIPALITY MINIMARYMETA > THE WAY IN THE Management of the second of the second secon WEIGHTER THE TELEFORM TO THE TELEFORM TO THE TELEFORM TO THE TELEFORM MMI--MING MICCHIGGION IN---M CONTAIN MICROTAL MOI -- CTURNING MINISTRI -- NICHARINAM LPT-T-GREEN THE THE -- 14.4 MM NAME W /// Magraph --- Architectum WITH THE WIT NUMBER --- PROMING NEAR PROPERTY ARREST PROTEST STAND 2---/// /// /// /// /// // MM/// /// MECHANISM MANAGEMENT MMM.173 /// //wwww MUDINGTON M A11.17.17.17. N Contraction and the part of th MAN NTT TO THE MILITAGE LIM ALC: CAL MALTERIA 77777 Managana SIMMIN 2 BEAUTIC CONTINUE MARKETINGAM MANAGEMENT MINITALITATION MMCCACTANA M. Supplied Land. New Manage //// THE PROPERTY.

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CARD

TITLE=NASTRAN COURSE - - - DEMO. PRCB. 1A SUBTITLE=STATIC STRESS ANALYSIS OF ARCH SPC=21
SET 13 = 1,2,11,12,21,22,31,32,41,
SET 13 = 1,2,11,12,21,22,31,32,41,
A2,51,52
\$ NOTICE HOW LINES ARE CONTINUED OLOAD=ALL DISP=ALL SUBCASE 1
LADEL=PRESSURE LOAD
LOAD=9
SPCFORCE=ALL
STRESS=ALL SUBCASE 2 LABEL=GRAVITY LOAD STRAIN=ALL FORCE=ALL NCHECK=5

DIFFERENT STRUCTURE CAN BE SOLVED BY CHANGING B.C. SUBITILE=STATIC STRESS ANALYSIS OF RING-STIFFENED CYLINDER LABEL=AXISYMMETRIC PRESSURE LOAD (COMPARE TO PROB. 18) SUBCASE 3

LOAD-8

SPC=22

C0401

STRESS=ALL OLOAD=NONE

SUBCOM 5

LABEL=FIRST TWO LOADS COMBINED (ARCH PROBLEM)
SUBSEQ= 1.0, 1.0, 0.0
THE NUMBER OF SUBSEQ FACTORS SHOULD EQUAL THE NUMBER OF SUBCASES. STRESS= 13

BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

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9, 1981 FEBRUARY

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FEBRUARY 9, 1981

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	CARD	F Z D C)	101-	102-	103-	104-	105-	106-	- 401	103-	1001	110-	111-	112-	113-	141	115-	116-	1 1/2	118-	119-	120-	121-	122-	123-	124-	125-	

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

34 STARTING WITH ID 101	18 STARTING WITH ID	ENT ID = 1
		BEGINNING WITH ELEME
, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE	, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE	. ENGOLD IS PROCESSING ELEMENTS OF TYPE = 18, BEGINNING WITH ELEMENT ID =
*** SYSTEM INFORMATION MESSAGE 3113.	*** SYSTEM INFORMATION MESSAGE 3113,	*** SYSTEM INFORNATION MESSAGE 3107.
*** SYSTEM	*** SYSTEM	*** SYSTEM

***USER INFORMATION MESSAGE 3023PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL (N = 175) TIME ESTIMATE	
RAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL 1 C AVG = 30 PC AVG = 0 SPILL GROUPS = 9 C MAX = 39 PCMAX = 0 PC GROUPS = 10 PC GROUPS = 1.EST. TIME = 11 MPYADNULL MATRIX PRODUCT	
RAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL C AVG = 30 PC AVG = 0 SPILL C MAX = 39 PCMAX = 0 PC METHOD 2 NT,NBR PASSES = 1,EST, TIME = MPYAONULL MATRIX PRODUCT	9.
RAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLG C AVG = 30 PC AVG = 0 C MAX = 39 PCMAX = 0 METHOD 2 NT, NBR PASSES = 1,EST. 7	TIME =
RAMETERS FOR SYMMETRIC DECOMPOSITION OF C 1 C AVG = 30 PC AVG = 9 C MAX = 39 PCMAX = METHOD 2 NI,NBR PASSES = 1 MPYADA-NULL MATRIX PRODUCT	1,EST. 1
RAMETERS FOR SYMMETRIC DECOM C AVG = 30 C MAX = 39 METHOD 2 NT.NBR MPYADNULL MAT	WETHOD I NT, NBR PASSES = 1, EST. TIME
RAMETERS FOR SYMMETR 1 AVG = C MAX = 9 METHOD MPYADO-1	I NT. NBR
RAMETERS FOR C C C	METHOD
RAMETERS 9	
••USER INFORMATION MESSAGE 3023—PAR. TIME ESTIMATE== 1 ADDITIONAL CORE= -27689	

NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF ARCH

NASTRAN 12/15/80 9, 1981 FEBRUARY

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PAGE

*** USER INFORMATION MESSAGE 3035

1 EPSILON SUB E = -4.2834224E-13 FOR LOAD

*** USER INFORMATION MESSAGE 3035

2 EPSILON SUB E = -6.8413349E-13 FOR LOAD

1, EST. TIME = WPYAD--MULL MATRIX PRODUCT METHOD 1 T ,NBR PASSES =

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194) 0 S AVG # 0 PREFACE LOOPS # ***USER INFORMATION MESSACE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL (N = 1 1 NE ESTIMATE 2 C AVG = 32 PC AVG = 0 SPILL GROUPS = 42 PCMAX = 0 PC GROUPS =

1.EST. TIME = MPYAD--NULL MATRIX PRODUCT METHOD 1 NT,NBR PASSES =

'n

*** USER INFORMATION MESSAGE 3035

3 EPSILON SUB E = -3.9495476E-13 FOR LOAD

1.EST, TIME = MPYAD--NULL MATRIX PRODUCT METHOD 2 I ,NBR PASSES =

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*** USER WARNING MESSAGE 2076, SDR2 DUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2077, SDR2 DUTPUT DATA BLOCK NO. 2 1S PURGED

3 IS PURGED *** USER WARNING MESSAGE 2078, SDR2 GUTPUT DATA BLOCK NO.

*** SYSTEM WARNING MESSAGE 3001

ATTEMPT TO OPEN DATA SET 205 IN SUBROUTINE SDR2 , WHICH WAS NOT DEFINED IN THE FIST

VECTOR

DISPLACEMENT

SUECASE 1

PAGE

NASTRAN COURSE - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF ARCH

PRESSURE LOAD

R3 0.0 -4.634204E-06 -7.42138E-06 -7.75636E-06 0.0 0.0 -4.3648H1E-06 -7.351418E-06 -7.351438E-06 -7.351438E-06 -7.351438E-06 -7.351438E-06 -7.351438E-06 -7.351496E-06 -6.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0	211356E-0 2011356E-0 20113750E-0 20278E-0 201978E-0 201978E-0 201978E-0 201978E-0
82 3.036018E-07 -1.528023E-07 -2.202558E-06 0.0 4.481374E-07 9.911967E-08 -7.538695E-06 0.0 1.351567E-06 1.05257E-06 2.9E8393E-07 -4.331938E-07 -4.331938E-07 -5.381938E-07 -7.351567E-06 1.351567E-06 1.351567E-06 1.351567E-06 1.351567E-07 -4.930057E-07 -4.930057E-07 -7.4558456E-05 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07 -7.45667E-07	-2.452800E-0 0.0 0.0 -4.134851E-0 1.131615E-0 0.0 0.0 0.0 0.0 0.0
R1 0.0 2.4C4584E-06 4.549415E-06 0.0 0.0 0.0 1.33025E-06 1.3302481E-06 1.330249E-07 2.5433712E-07 7.918299E-07 7.918299E-07 2.55316E-07 1.35026E-06 0.0 0.0 0.0 1.35026E-06 1.35026E-06 0.0 0.0 0.0 1.35026E-06 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	4.218928E-07 0.0 0.0 0.0 1.945509E-07 -1.940449E-06 -3.475293E-07 0.0 0.0
13 -2.504486E-05 -2.504486E-05 -1.731531E-05 -1.001820E-05 -1.731531E-05 -1.731531E-05 -1.731531E-05 -1.731531E-05 -1.72301E-05 -1.72301E-05 -1.72301E-05 -1.72301E-05 -1.72301E-05 -1.72301E-05 -1.72301E-05 -1.72301E-05 -1.72301E-05 -1.72301E-06 -1.72301E-06 -1.72301E-06 -1.72301E-06 -1.72301E-06 -1.72301E-06 -1.72301E-06 -1.72301E-06 -1.72546E-06 -1.72546E-06 -1.72546E-06 -1.72546E-06 -1.72546E-06 -1.72546E-06 -1.72546E-06 -1.72546E-06	
12 1.515759E-05 2.47935E-05 2.527797E-05 0.0 0.0 1.35692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.25692E-05 1.27404E-05 1.27404E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05 1.274037E-05	0 00 0 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0
11 -2.228961E-04 -2.000858E-04 -1.397128E-04 -6.467411E-05 -9.750354E-06 0.0 -2.215757E-04 -1.494580E-04 -1.494580E-04 -1.495939E-05 -2.135432E-04 -1.966677E-04 -1.966677E-04 -1.966677E-04 -1.966677E-04 -1.966677E-04 -1.966677E-04 -1.966677E-04 -1.966677E-04 -1.966677E-04 -1.966677E-04 -1.9666772E-04 -1.966677E-04 -1.9666772E-04 -1.9666772E-04 -1.9666772E-04 -1.9666772E-04 -1.9666772E-04 -1.9666772E-04 -1.9666772E-04 -1.9666772E-04 -1.9666772E-04 -1.9666772E-04 -1.9666772E-04	
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PAGE

SUBCASE 2

NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF ARCH

GRAVITY LOAD

	R3	0	-3.259090E	-4.553741E	-3.082887E	1,410336E-07	0.0	0.0	-3.860818E-0	-5.474519E-06	-3.442012E-0	1.154938E-0	0.0	0.0	-3.919672E-06	-5.465271E	-3.271599E	1.146185E	0.0	0.0	-3.783760E-06	-5.226798E-06	-3.1178415-06	9.742547E	0.0	0.0	-3.208692E	-4.346019E	-2.737384E-06	-6.385269E	0.0	0.0	-3.620016£-06	-4.994130E	-3.034791E	8.200321E	0.0	0.0	-3.640034E	-5.019	-3.050827E	8.551340E	0
	R2	3.046781E-07	3.203342E-07	3.965800E-07	4.539116E-07	3.159292E-07	0.0	1.576057E-07	2.003684E-07	2.882576E-07	2.591331E-07	-2.755101E-08	0.0	2.604540E-07	2.301182E-07	1.123007E-07	-9.009750E-08	-1.638716E-07	0.0	3.083879E-07	2.256739E-07	-1.605286E-08	-2.579556E-07	-1.739997E-07	0.0	1.784459E-07	1.277608E-07	1.039035E-08	-8.161833E-08	-5.744386E-08	0.0	1.783673E-08	2.149290E-08	5.912721E-08	1.113879E-07	5.470791E-08	0.0	0.0	0.0	0.0	0.0	0.0	ö
VECTOR	ű	0.0	2.560079E-06	3.6836765-06	2.500327E-06	-3.0.16970E-06	0.0	0.0	-2.040344E-06	-2.554847E-06	-1.259724E-06	9.418586E-07	0.0	0.0	2.320563E-07	2.534491E-07	5.331842E-08	1.156545E-07	0.0	0.0	1.231038E-06	1.314137E-06	6.06658E-09	6.311973E-08	0.0	0.0	8.430916E-09	2.210673E-08	5.366140E-08	1.177978E-07	0.0	0.0	-1.230495E-06	-1.433405E-06	-9.242703E-08	3.004721E-07	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ACEMENT	~) ⊢	-7.008* ARE-06	-6.872509E-06	-6.434994E-06	-5.372288E-06	-3.494404E-06	0.0	-5.749095E-06	-5.6114388-06	-5.102306E-06	-4.113376E-06	-2.339640E-06	0.0	-4.613229E-06	-4.4516285-06	-3.929585E-06	-2.9763:2E-06	-1.608385E-06	0.0	-3.490135E-06	-3.325915E-06	-2.830161E-06	-2.040271E-06	-1.087129E-06	0.0	-2.202500E-06	-2.175745E-06	-1.834181E-06	-1.310102E-06	-6.808518E-07	0.0	-1.102459E-06	-1.052043E-06	-9.050172E-07	-6.665523E-07	-3.313692E-07	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 4 8 1 0	12	0.0	8.4167675-06	1.2957115-05	1.197187E-05	6.855325E-06	0.0	0.0	8.443238E-06	1.2820585-05	1.1233885-05	5.737268E-06	0.0	0.0	8.325387E-06	1.2447756-05	1.072716E-05	5.387799E-06	0.0	0.0	7.975443E-06	1,191830E-05	1.032727E-05	5.2729085-06	0.0	0.0	7.501584E-06	1.127945E-05	9.987360E-06	5.353573E-06	0.0	0.0	7.629786E-06	1.1435955-05	9.986002E-06	5.170013E-06	0.0	0.0	7.674238E-06	1.149006E-05	9.992504E-06	5.135539E-06	0.0
	1	-1.023634E-04	-8.547237E-05	-4.472267E-05	-4.695338E-06	9.427450E-06	0.0	-1.014205E-04	-8.402380E-05	-4.175013E-05	-6.415477E-07	1.078038E-05	0.0	-9.994392E-05	-8.240266E-05	-4.010319E-05	-4.564957E-09	1.005771E-05	0.0	-9.742015E-05	-8.041890E-05	-3.978188E-05	-1.635680E-06	8.709633E-06	0.0	-9.467268E-05	-7.845081E-05	-4.009975E-05	-4.339904E-06	7.3581716-06	0.0	-9.459906E-05	-7.835345E-05	-3.957845E-05	-2.952426E-06	7.772147E-06	0.0	-9.468609E-05	-7.836667E-05	-3.932137E-05	-2.377798E-06	8.034097E-06	0.0
	نیا																												g														
	POINT 1D.	-	2	m	4	ß	9	=	12	13	4	51	10	21	22	23	54	25	56	31	32	33	34	35	36	14	42	43	44	45	46	51	52	53	54	52	56	61	62	63	64	69	99

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NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF RING-STIFFENED CYLINDER

BCASE 3

STATIC	STRES	S ANALYS	SIS OF RING-STIFFENED	FENED CYLINDER				
AXISYMME	METRIC	PRESSUA	RE LOAD (COMPARE	E TO PROB. 18)				SUBCASE
				DISPL	ACEMENT	VECTOR		
POINT	10.	TYPE	=		1.3	ā	R2	R3
	-	co	.009879E-0	0.	-2.763722E-05	0.0	-2.028935E-06	
	7	ဖ	.00 ±87	.021720F-17	-2.763722E-05	-9.820924E-18	-2.028935E-06	.664250E
	က	O	.009879E-0	.115761E-17	-2.763722E-05	-1.038971E-17	-2.028935E-06	ī
	4 :	<u>ن</u> ی	.003879E-	1418505-17	-2.763722E-05	-1.091825E-17	-2.0289356-06	.5966645-1
	ın ı	o o	40-36/66/00.1-	-5.074998E-17	-2.7.3722E-05	-1.103345E-17	-2.028935E-06	.745565E-1
	٠ ف	ტ (-1.009879E-04	o. •	-2.753722E-05	0.0	-2.028935E-06	0.0
	- (:) (-1.156485E-04	0.0	-2.3304.49E-05	0.0	-1.301817E-06	.0
	2 :	3 (11.1001306104	-5.249571E-17	-2.330449E-C5	7.256108E-18	-1.301817E-06	. 929850E-1
	. t	9 (2	+1 156485E-04	-8.43558F-17	-2.350449E-05	1.3527546-17	-1.301817E-08	2.732189E-17 2.737610E-17
	<u>.</u> 7	0	-1,155485E-04	-5.285401E-17	-2.3304:9E-05	7.210791E-18	-1.301817E-06	.027458E-1
	9	ن	-1.156485E-04	0.0	-2.330449E-05	0.0	-1.301817E-06	
	21	U	-1,199919E-04	0.0	-1.8591c9E-05	0.0	2.943078E-08	0.0
	22	IJ	+1.1999198-04	-5.375900E-17	-1.8591-9E-05	2.954152E-19	2.933C78E-08	.0491425-1
	23	ŋ	-1,193919E-04	-8.612292E-17	-1.859189E-05	-9.235306E-20	2.993078E-08	.845031E-1
	24	g	-1.1999195-04	-8.615342E-17	-1.859169E-05	-1.361096E-18	2.9030785-08	.764716E
	25	g	-1,199919E-04	-5.396870E-17	-1.859169E-05	-4.905115E-19	2.993078E-08	.087389E-1
	56	IJ	-1,199019E-04	0.0	-1.8591698-05	0.0	2.933078E-08	0.0
	31	ڻ ن	-1.16756E-04	0.0	-1.3%5672E-05	0.0	8.359197E-07	٥.
	32	U	-1.167566E-04	-5.429481E-17	-1.3%5672E-05	-4.051147E-18	8.3591976-07	٠.
	33	U	-1.167506E-04	-8.712920E-17	-1.385672E-05	-6.504578E-18	8.359197E-07	.8514526-1
	34	ø	-1.167566E-04	-8.733341E-17	-1.3%5672E-05	-5.805564E-18	8.359197E-07	.840610E-1
	35	ت	-1.187555E-04	-5.452891E-17	-1.345672E-05	-1.658491E-18	8.359197E-07	.038300E-1
	36	ڻ ا	-1.167556E-04	0.0	-1.385672E-05	0.0	8.359197E-07	0.0
	1	<u>ن</u> ي	-1.115669E-04	0.0	-9.23249E-06	0.0	2.114834E-09	0.
	42	۰ ق	-1.115669E-04	-5.43820bE-17	-9.290249E-06	-2.183803E-19	2.114834E-09	.837723E-1
	43	o (-1.115669E-04	-8.745123E-17	-9.20249E-06	2.116863E-19	2.114834E-09	.791821E
	44	უ (+1.115659E-04	-8.754301E-17	-9.2:0249E-06	2.614253E-20	2.114634E-09	.766430E-1
	ນ 6) (11.11000000110.1	71.37613460	-8.20249E-06	1.948319E-14	2.1148345-09	.83//23E-1
	ф С -	ງ (-1.1.0003E-04	, (9.450249E-06		7.1-48341109	
	- 0) (-1.166574F-04	-5.653103F-17	-4.725764F-06	2.640413F-18	-8 1003445-07	2009305-1
	, L.	ı o	16657	.011795E-17	-4.725764E-06	5.9028145-18	-8.100344F-07	976135E-1
	54	G	.16657	.958962E-17	-4.725764E-06	6.465826E-18	-8.100344E-07	.905662E
	S F	g		.579342E-17	-4.725764E-06	3.253030E-18	-8.100344E-07	.043721E-1
	56	_U	.166574E-	0.	.725764E-0		-8.100344E-07	0.
	61	ŋ	6309E-0	٥.			0.0	0.
	ê2	G	0309E-C	.71:351E-1			0.0	.2226145-1
	63	ڻ ت	6309E-	.071382E-1			0.0	.986977E-1
	64	ပ (.196309E-0	.012954E	0.0		0.0	.8677152
	65	ڻ د	6309E	.615127E-1			0.0	.0870895-1
	99	o	309E-		•		0.0	0.0

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FIRST TWO LOADS COMBINED (ARCH PROBLEM) NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF ARCH

SUBCOM 5

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R3 -7.893294E-06 -1.204558E-05 -1.025677E-05 -0.0 -0.0 -1.263658E-06 -1.263659E-06 -1.263658E-06 -1.126509E-06 -1.126509E-06 -1.126509E-06 -1.148017E-05 -1.198017E-06 -1.09738E-05 -1.09738E-05 -1.005275E-06 -1.0052	-9.693114E-06 -6.100246E-06 0.0 -5.962012E-06 -9.605674E-06 -9.704788E-06 -6.395615E-06
R2 6.082799E-07 1.675320E-07 1.748647E-06 0.0 6.757431E-07 2.994881E-07 4.766118E-07 1.275431E-07 1.62822E-06 0.0 1.6720218-06 1.275376E-06 1.275376E-06 1.275376E-06 1.275376E-06 0.0 1.67018828E-07 0.0 1.67018E-07 1.67018E-07 0.0 1.770686E-07 0.0 1.67018E-07 0.0 1.67018E-07 0.0 1.67018E-07 0.0 1.67018E-07 0.0 1.67018E-07 0.0 1.67018E-07 0.0 1.67018E-07 0.0 1.67018E-07 0.0 1.67018E-07 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	-1.020227E-06 -8.045008E-07 0.0 0.0 0.0 0.0
R1 9. 954654E - 06 8. 233091E - 06 9. 410562E - 06 0. 0 1. 254825E - 06 1. 254825E - 06 1. 04527E - 06 0. 0 0. 0 0. 0 0. 0 1. 04527E - 06 0. 0 0. 0	-2.082876E-08 0.0 0.0 0.0 0.0 0.0 0.0
13.33 ##55	2.8.1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0
12 2. 3574582E-C5 3. 774666E-05 2. 359012E-05 0. 0 0. 0 2. 204440E-05 3. 402434E-05 3. 4024346E-05 3. 4024346E-05 3. 4024346E-05 1. 93946-05 1. 746345E-05 1. 746345E-05 1. 746345E-05 1. 746345E-05 1. 746345E-05 1. 746345E-05 1. 765994E-05 1. 765994E-05 1. 765994E-05 1. 765994E-05 1. 765994E-05 1. 765994E-05	
13.252.596 14.855581E-04 15.295581E-04 15.295961E-04 17.295961E-04 17.295961E-04 17.295961E-04 17.295961E-04 17.295961E-04 17.295961E-04 17.295961E-04 17.29593E-05 17.34371E-04 17.395931E-	2.766372 2.766372 2.844329 2.578281 1.8883868 3.0283868
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POINT IN 10 POINT 11	14 ฃ ฬ ๒ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ ฬ

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NASTRAN COURS	SE S ANALY	- DEMO. PROB. SIS OF ARCH	વ ⊏			FEBRUARY	1961 .6	NASTRAN 12/15/80	PAGE
PRESSURE LOA	9							SUBCAS	F 4
			0 7	> 0	ECTOR				
POINT 10.	TYPE	-	12	13		<u>۳</u>	R2	R3	
- (o c	1.670077E+	.167832E+0					•	
N (5 (0.64015464	7,83//6-1		•		٠		
.b. 4	ე დ	-3.340154E+01	-2.842171E-14	0.0	0 0		0 0	0 0	
· rc		3,340154E+	2737375-1						
9	ပ	1.670077E+	167832E+0		•				
Ξ	IJ	3.340154E+	.335564E+0		•			•	
2 9	ග (6.680309E+	.557954E-1		•			•	
n •	9 (6.680309E+			•		•	•	
	י כ	6.680309E+	100404667		•		•		
	ე ტ	3.340154E+	.335664E+0						
	ŋ	3.340154E+	.335664E+0		•				
	ပ	6.680309E+	.557954E-1				•	•	
	ပ	6.680309E+0	.094947E-1		•			•	
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	g	3.340154E+	3355546+0		•				
	ιj	3.3401545+0	.335564E+0						
	J	6.660309E+	.EE7954E-1		٠			•	
4 ¢	တ (6.680309E+	.001947E-1		•			•	
) (6.680309E+	5.1747.46+1		•				
	O	3.340154E+	3356645+0						
	IJ	3.340154E+	.305964E+0						
	IJ	6.680303E+	.857354E-1		•				
	U	6.580309E+	.0 44347E-1		•				
	g	6.5803095+	. 6n4342E-1		٠			•	
	ပ	6.680309E+	.547474E-1		٠			•	
	.	3.340154E+	.335664E+0		٠			•	
	. .	1.570077E+	.167832E+0		•		•	•	
	9 (3.340154E+	278377E-1		٠			•	
	9 (3.340154E+	0,04747-1		•			•	
	5 (G. G4O - 34E+	0421/1E-1		•		•	•	
	י פ	3.340134E+	167837E-1		•				
	,	1.00.00.1	0.0000		•				

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PAGE

SUBCASE 2

NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF ARCH

GRAVITY LOAD

01	TYPE	11	12	13	R1	R2	R3
-	₍₃	5.892700	٠			2.887127	٥.
8	g	1.167070E+	.640211E+0		.036208E-0	5.718059E-	-4.821725E-01
ო	g	1.132885E+	.2484965+0		.591600E-	5.550569E	.549600E-0
4	IJ	1.076650	.793554E+0		.348600E-	5.275043	.409160E+0
Ŋ	U	9.994585E+0	6.2453105+00		ش	.896845E	-1.835933E+00
ဖ	g	4.514070	.787754E+0		.855809E-	.211667E-	.113486E+0
=	IJ	-9.4756985+00	0.0	٥. ٥	٠.	0	٥.
12	O	1.876696E+	.637525E+0	•		•	•
13	IJ	1.821725E	.223713E		0.0		0.0
14	g	1.731296E	.708227E+0	٠	•	•	
15	g	1.607170	.004271E+0		•		
16	g	7.258806E	.090861E+0		•		
21	ŋ	9.475698	٥.	•	٠	•	
22	ပ	1.876696E+	.637525E+0		•	•	
23	g	1.821725E+	.223713E+0			•	•
24	G	1.7312965+	.703227E+0	•	•	•	•
25	J		.00427		•	•	•
56	g	7.259806	.090861E+0	•	•		•
31	ŋ	9.475698E+0	٠.	•	•	•	•
32	U	1.875696E+	.637525E+0		•	•	•
33	U	1.821725E+	.223713E+0	٠	٠		•
34	IJ	1,731296E+		٠	•		•
35	O	1.607170E+	.004271E+0	٠			
36	g	7.258806	.090361E+0	•	•		
14	g	1,063055E+	•	•	٠	•	•
42	თ		.9589736+0	•	•	•	321725
43	J	2.043748E+	.860353E+0	•	•	•	549600E-0
44	<u>ი</u>		.647667	٠	•		9
45	v	1.803043E+	.1265575+0	•	٠		335933E+0
46	g	8.143473	.8331852+0	•	•		.113486E+0
51	g	9.475698	0.0	٠	٠	٠	•
52	ڻ	1,876696	.537525E+0	•	•	•	•
53	o	1.821725	.22371	•	•	•	•
54	g	1,731296	.708227E+0		•		•
55	g	1.507170	.00427	•	•	•	•
56	ø	7.258806E+0	.090861E+0	•	•		•
61	g	4,7378495+0		•	•		•
62	g	9.383481E+0	.318762E+0	•	٠	•	•
63	g	9.108625E+0	.611856E+0		•	•	•
64	g	8.656481	.854114E+		•		0.0
U	(0.10.00	1 1 0 . 6 6				
•	3	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	0713555	•			

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FIRST TWO

POINT

DUNSE RESS ANALYSIS	SIS OF ARCH	₹			FEBRUARY	24.7	NASIKAN 12/15/60
LOADS CON	COMBINED (ARCH PRO	ROBLET					SUBCOM
			0 4 0	VECTOR			
. TYPE	ī	12		T3 R1	_	R 2	R3
g	-2.2593476+01	-1.157832E+00	0.0	•	0.0	7E-	0.0
g	-4.507225E+01	1.6432115+00	0.0	-8.03620	38E-02	5.7183598-	
g	4	3.2484966+00	0.0	-1.53160	20E-31	-5.5508698-01	-9.549600E-01
IJ	-4,416804E+01	4.7935545+00	0.0	-2.34860	00E-01	5.275043E-	-1.409160E+00
O	+4,329613E+01	6.2453105+00	0.0	30040.5-	38E-01	-4.896845E-01	-1.835933E+00
• •	-2,121484E+01	4.355565.+00	0.0	0901	39E-01	-2.211667E-01	-1.113486E+00
g	-4.2877246+01	-2.3356645+00	0.0	3		o. 0	0.0
IJ	-8.557005E+01	2.6375256+00	0.0	•		0.0	0.0
IJ	-8.502034E+01		0.0	٠		0.0	0.0
IJ	-8.411605E+01		0.0	•		0.0	0.0
O	-8.287478E+01		0.0			0.0	٥.٥
ග	-4.066035E+01		0.0	•		0.0	0.0
g	-4.287724E+0*		0.			0.0	0.0
g	-8.557005E+01		ر			0.0	0.0
g	-8.502034E+01		0.0	•		0.0	0.0
g	-8.411605E+01		0.0			0.0	0.0
ن	-8.287478E+01	1.004271E+01	0.0			0.0	0.0
_U	-4.066035E+01		0.0	٠		0.0	0.0
ن	-4.2877245+01		0.0	٠		0.0	0.0
G	-8.557005E+01		0.0			0.0	0.0
U	-8.502034£+01		0.0			0.0	0.0
ڻ ا	-8.411505E+01		0.			0.0	0.0
O	-8.2874785+01		0.0			0.0	0.0
g	-4.066035E+01		0.0			0.0	0.0
IJ	-4,403209E+01		0.0			0.0	0.0
U	-8.785727E+01		0.0			0.0	-4.821725E-01
ø	-8.7240576+01		0.0			0.0	9
(J	-8.622e07E+01		0.0			٥.٥	o
ڻ و	-8.483352E+01		0.0			0.0	
G	-4,154502E+01		0.0			0.0	9
ڻ ن	-4.287724E+01		0.			0.0	0.0
o	-8.557005E+01		0.0	•		0.0	0.0
g	-8.502034E+01	5.273713E+00	0.0			0.0	0.0
O	-8.4116C5E+01	7 7042275+00	0.0			0.0	0.0
U	-8.287478£+01	1.004271E-01	0.0			0.0	0.0
(J	-4.0500352+01	9	0.0			0.0	0.0
ပ	-2,1433852E+01	9	o 0			0.0	0.0
o	4.278503E+	0	0			0.0	0.0
g (4.251017E+	11856E+0	0.0	0.0		0.0	0.0
g	.205803E+	.854114E	0			0.0	0.0
()	.143739E+	.021355E+	0			0.0	0.0
IJ	-2.033018E+01	.213262	0.0			0.0	0.0

SUPCASE 1

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PRESSURE LOAD

	R.3	-2.760247E+01	1,145139E+02	1.221401E+01	1.480613E+01	1.146503E+01	2.524103E+01	8.422449E+00	2.927077E+01	-5.118916E+01	1.591055E+02	5.908512E+00	3.436843E+01	3.208634E+00	0.0	0.0	0.0	0.0	1.816421E+01
T R A I N ⊣	R2	0.0	3.992810E-01	0.0	-1.771332E+00	0.0	-7.056866E-01	0.0	-2.316405E+00	0.0	-5.864632E-02	0.0	1.980470E+00	9.362981E-01	2.382199E+00	3.557082E+00	3.704730E+00	-2.654793E+00	-1.622777E+00
SINGLE-POINT CONSTRAINT	ά	-7.0539225+00	1.9064495+01	-4.0145@6E-13	-1.23A636E-01	-1.5099036-12	-4.933511E-02	-1.7 to .: CE-12	-1.619788E-01	3.2633+2E-03	-8.819043E-02	-1.6C4050E-12	1.384879E-01	-6.547234E-02	1.556087E-02	1.598563E-02	1.827530E-02	2.904116E-01	-1.134756E-01
NGLE-POI	7.3	0.0	1.348856E+02	0.0	7.180953E+01	0.0	5.145966E+01	0.0	3.012638E+01	0.0	2.358457E+01	0.0	1.811879E+01	-6.378187E+00	-2.231368E+01	-4.744747E+01	-7.861177E+01	-1.058307E+02	-6.940266E+01
FORCES OF SI	5	2.2931215+02	-3.87969:5+02	4.159772E+32	-4.8034015+02	4.820367E+02	-4,470319E+02	4.7030875+02	-4.334471E+02	4.923689E+02	-4.875136E+02	4.720149E+02	-4.327370E+02	2.418853E+02	0.0	0.0	0.0	0.0	-2.213707E+02
F O R C E	Į.	0.0	-1.350937E+01	0.0	2.876731E+00	0.0	5.177262E+00	0.0	6.003936E+00	0.0	5.371977E+00	0.0	6.832024E+00	0.0	0.0	0.0	0.0	0.0	3.636002E+00
	TYPE	IJ	Ø	g	IJ	o	g	IJ	ŋ	IJ	ø	IJ	(J						
	POINT ID.	-	φ	-	16	21	26	31	36	41	9,7	51	56	61	62	63	64	65	99

SUBCASE 1

PRESSURE LOAD

	TOROUE	-2.865282E-02	-6.097257E-02	-2.173504E-02	9.509480E-02	2.036873E-01	-2.180603E-02	-4.908932E-02	-3.426563E-02	1.457567E-02	2,731315E-02
	AXIAL	-2.958180E+01	-3.813125E+01	-5.389144E+01	-7.132793E+01	-7.742910E+01	-4.195017E+01	-4.353340E+01	-4.827662E+01	-5.948399E+01	-7.773501E+01
(C B A B)	PLANE 1 PLANE 2	•	1.169350E+00 3.698958E-01	1.739644E+00 5.385208E-01	1.561217E+00 3.860297E-01	-7.983123E-01 -3.908055E-02	3.838464E-02 -1.953974E-04	1.556712E-01 -9,958199E-04	4.539253E-01 -2.940276E-03	1.047552E+00 1.929795E-03	1.240588E+00 -1.265603E-02
IN 3AR ELEMENTS	BEND-MOTENT END-8	10-3		-7.485757E+00 -2.319905E+00	-1.118962E+01 -1.358543E+00	-7.148348E-31 3.625859E-01 -	3.309483E+00 4.81C741E-03	2.300057E+00 2.419856E-03	-3.333114E-01 2.746457E-03	-5.810635E+00 -2.858888E-02	-1.144718E+01 8.256038E-02
FORCES	BEND-MOMENT END-A PLANE 1 PLANE 2	+00	8.2732046+00 1.338:256+00	6.711361E+00 2.075175E+00	1.5522646+00 1.7920416+00	-7.230267£+00 4.362963E-02	3.622760E+00 3.216004E-03	3.570569E+00 -5.707525E-03	3.371403E+00 -2.125062E-02	2.738970E+00 -1.283885E-02	-1.322114E+00 -2.073194E-02
	ELEMENT ID.	10	102	103	104	105 -	141	142	143	144	145 -

PAGE

NASTRAN COURSE - - - DEMO. PROB. 14 STATIC STRESS ANALYSIS OF ARCH

PRESSURE LOAD

SUBCASE 1

A D 2)	SHEAR	>-	-1.418942£-01	-1.523763E-01	-1,537815E-01	-1.006268E-01	1.017881E-01	1.092782E-01	8.727434E-02	2.849364E-02	-7.239947E-02	9.505511E-02	1.742508E-02	-9.036573E-03	-5.429413E-02	-6.301182E-02	1.551517E-02	1.575894E-01	1.579831E-01	1.8469572-01	1.970122E-01	6.446228E-02	-1.095955E-01	-1.507854E-01	-2.336580E-01	-2.549940E-01	-2.189340E-02	2.846296E-02	2.390308E-02	1.663183E-02	5.285962E-04	2.885344E-02
MENTS (COU	SHEAR	×	1.077680E-01	3.141598E-01	4.676446E-01	4.325655E-01	-1.504988E-01	1.304327E-02	3.736154E-02	6.099303E-02	9.535194E-02	2.336557E-01	1.271103E-02	3.407839E-02	3.850230E-02	5.013387E-02	3.621179E-01	1.638352E-02	5.770901E-02	1,289781E-01	2.589577E-01	4.429216E-01	7.689182E-03	3.549748E-02	1.106708E-01	2.756009E-01	4.909236E-01	-7.523267E-03	-2.120855E-02	-1.466257E-02	9.074453E-02	5.200483E-01
ATERAL ELE	TWIST-MOMENT		-1,401618E-01	-3.591295E-01	-3.6201265-01	-5.448130E-02	5.042840E-01	-6.512785E-02	-1.631880E-01	-1.594053E-01	5.1070035-02	2.5481785-01	-6.475243E-02	-1.5817535-01	-1.54841AE-01	-4.531952E-02	2.897003E-02	-4.882180E-02	-8.9857785-02	-1.139654E-02	4.167625E-02	-3.876512E-02	-5.781782E-02	-1.537087E-01	-1.638840E-01	1.995776E-02	1.659009E-01	-2.269091E-02	-5.344536E-02	347157E-0	7.845861E-02	1.078833E-01
RAL QUADRIL	BEND-MOMENT	>	4.555955E-01	3.6002 3E-01	1.722571E-01	-6.653521E-02	-3.424251E-01	7.514042E-01	6.4969-46E-01	4.390721E-01	1.005778E-01	+3.580956E-01	4.722.57E-01	4.407-014E-01	3.958326E-01	2.082934E-01	-4.596424E-01	-2.688843E-02	-8.1913-55-02	-1.971118E-01	-3.3701465-01	-6.555240E-01	-6.998537E-02	-8.193778E-02	-1.393398E-01	-2.719588E-01	-6.9463,05-01	3.507471E-01	4.4473:0E-01	5.445838E-01	3.644522E-01	-5.537669E-01
CES IN GENE	BEND-MOMENT	×	1.480494E+00	9.8:0189E-01	7.341273E-62	-1.026289E+00	-1.336195E+00	1,443514E+00	1,048912E+00	3.245124E-01	-5.885507E- 0 1	-1.753590E+00	1.193801E+00	9.11252ëE-01	4.201613E-01	-2.354890E-01	-1.972172E+00	9.002302E-01	7.056620E-01	3.027214E-01	-3.865034E-01	-1.912248E+00	7.704980E-01	6.755742E-01	4.262561E-01	-2.296686E-01	8145+	8.209805E-01	.139		.3757C8E-0	
n 0	ELEMENT	10.		2	ო	4	S		12	13	14	15	21	22	23	24	25	31	32	33	34	35	14	42	43	44	45	51	52	53	54	52

NASTRA STATIC	NASTRAN COURSE STATIC STRESS ANALYSIS	DEMO. PROB. 1 OF ARCH	٩		FEBRUARY	9, 1981 NAST	NASTRAN 12/15/80	PAGE	11
RESSU	PRESSURE LOAD						SURCASE	-	
ELEMENT ID.	541 581	SAZ SB2	S S E S I N SA3 SB3	8 A R E L E SA4 S34	M E N T S AXIAL STRESS	CBARS SA-MAX SB-MAX	S161-62 S161-62	M.S.1	
101	1.777819E+01 2.067983E+01	2.606363E+01 3.615829E+00	0.0	00	-2.958180E+01	-3.518169E+00 -8.901973E+00	-2.958180E+01 -2.958180E+01		
102	8.762021E+00 1.636086E+01	4.088217E+01 -2.398437E+01	0.0	0.0	-3.813125E+01	2.750919E+00 -2.177039E+01	-3.813125E+01 -6.211561E+01		
103	-4.769990E+00 5.381531E+00	4.504218E+01 -5.030657E+01	0.0.	0.0	-5.389144E+01	-8.849261E+00 -4.850991E+01	-5.866143E+01 -1.041980E+02		
104	-1.685068E+01 -1.726711E+01	2.616520E+01 -4.987735E+01	0.0	0.0	-7.132793E+01	-4.516273E+01 -7.132793E+01	-8.817861E+01 -1.212053E+02		
105	-2.221561E+01 -6.496445E+00	-2.116933E+01 2.207008E+00	0.0	0.0	-7.742910E+01	-7.742910E+01 -7.522209E+01	-9.964571E+01 -8.392555E+01		
141	1.083077E+01 9.871705E+00	1.090796E+01 9.987181E+00	00.0	0.0	-4.195017E+01	-3.104221E+01 -3.196299E+01	-4.195017E+01 -4.195017E+01		
142	1.078128E+01 6.871819E+00	1.064428E+01 6.929905E+00	0.0	0.0	-4.353340E+01	-3.275213E+01 -3.660350E+01	-4.353340E+01 -4.353340E+01		
143	1.037027E+01 -1.032997E+00	9.860172E+00 -9.670713E-01	0.0	00.	-4.827662E+01	-3.790635E+01 -4.827662E+01	-4.827662E+01 -4.930961E+01		
144	8.371622E+00 -1.709053E+01	8.063640E+00 -1.777677E+01	000	0.0	-5.948399E+01	-5.111216E+01 -5.948399E+01	-5.948399E+01 -7.726076E+J1		
145	-3.717915E+00 -3.533586E+01	-4.215561E+00 -3.335410E+01	000	0.0	-7.773501E+01	-7.773501E+01 -7.773501E+01	-8.195057E+01 -1.130709E+02		

PRESSURE LOAD

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PAGE

NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF ARCH

(C O O A D 2) SUBCASE 1 ELEMENTS GENERA QUADRILATERAL z STRESSES

EMEZT IO.	FIBRE DISTANCE	STRESSES NORMAL-X	(IN ELEVENT COOR NORMALTY	NI COORDINATE SY: O SYSTEM SHEAR-XY	STEM) PRINCI ANGLE	PAL STRESSES (Z MAJOR	ERO SHEAR) MINOR	MAX SHEAR
•	5.000300E-01	-4.569934E+01	2.4953825+00	-7.014837E-01	-89.1663	2.505590E+00	-4.571035E+01	2.410782E+01
	5.000000E-01	-6.340577E+01	-2.9717395+00	9.804578E-01	89.0717	-2.955913E+00	-6.348166E+01	3.026287E+01
	-5.000000E-01	-4.811169E+01 -5.991941E+01	1.7330105+00 -2.6093335+00	-1.512974E+00 2.796580E+00	-88.2647 87.2130	1.828845E+00 -2.473189E+00	-4.815752E+01 -6.005605E+01	2.499318E+01 2.879143E+01
	-5.000000E-01	-5.307322E+01	1.362709E-01	-4.372480E-01	-89.5292	1.398637E-01	-5.307681E+01	2.660834E+01
	5.000000E-01	-5.395417E+01	-1.931174E+00	4.146905E+00	85.4709	-1.602687E+00	-5.428266E+01	2.633999E+01
	-5.000.00E-01	-6.0877878+61	-3.0288495+00	4.264923E+00	85.8060	-2.717101E+00	-6.119042E+01	2.923666E+01
	5.000000E-01	-4.8562208+01	-2.2298265+00	4.918703E+00	84.0064	-1.713209E+00	-4.907861E+01	2.36F270E+01
	-5.0000008-01	-6.9133795+01	+1,3464865+01	1.453792E+01	76.0993	-1.039190E+01	-7.273175E+01	3.116992E+01
	5.000000E-01	-5.309945E+01	-9,8807595+00	8.485507E+00	79.2794	-8.274063E+00	-5.470615E+01	2.321604E+01
	-5.0000000E-01	-4.998303£+01	3.858411E+00	-2.325558E-01	-89.7525	3.859415E+00	-4.998404E+01	2.692173E+01
	5.000000E-01	-6.730520E+01	-5.1584:10E+00	5.489784E-01	89.4939	-5.153591E+00	-6.731005E+01	3.107823E+01
	-5.000000E-01	-5.2359335+01	2.4917078+00	-2.069292E-01	-89.7639	2.492487E+00	-5.236011E+01	2.742630E+01
	5.000000E-01	-5.4946275+01	-5.3048898+00	1.751326E+00	88.3195	-5.253307E+00	-6.499766E+01	2.987217E+01
	-5.003000E-01	-5.677684E+01	-4.904527E-01	1.332558E+00	88.6444	-4.649192E-01	-5.680838E+01	2.817173E+01
	5.000300E-01	-6.067099E+01	-5.765318E+00	3.245422E+00	86.6289	-5.574149E+00	-6.086216E+01	2.764401E+01
	-5.0000008-01 5.0000008-01	-6.234263E+01 -5.528002E+01	-5.968458E+00 -7.175891E+00	5.485133E+00 4.872293E+00	84.2742	-5.440216E+00 -6.687356E+00	-6.287137E+01 -5.576856E+01	2.8715588+01 2.4540608+01
	-5.003100E-31	-6.827417E+C1	-1.5081228+01	9.570257E+00	79.7252	-1.327385E+01	-7.008154E+01	2.8403845+01
	5.006100E-01	-4.723103E+C1	-1.0784088+01	£.912444E+00	79.6138	-9.517122E+00	-4.849804E+01	1.9490465+01
	-5,0000006-01	-5.196023E+01	1.653177E+00	-1.848591E-01	-89.8024	1.653815E+00	-5.196087E+01	2.680734E+01
	5,000:006-01	-6.628584E+01	-4.014011E+00	5.5.2348E-01	89.4551	-4.008378E+00	-6.629147E+01	3.114155E+01
	-5.0000006+01	-5,3649765+01	2.4923555-01	-9.9911178-02	-89.8937	2.194208E-01	-5.364945E+01	2.693468E+01
	5.000 005-01	-6,4584795+01	-5.0699375+00	1.798193E+00	88.2710	-5.015655E+00	-6.4e3907E+01	2.981171E+01
	10-300	-5.642723E+01 -6.146917E+01	-2.551@ak)E+60 -7.313980E+00	1.166583E+00 3.024682E+00	88.7601 86.8131	-2.526747E+00 -7.145577E+00	-5.645248E+01 -6.163758E+01	2.6962875+01 2.7246005+01
	# 8 . 100 1000 E + 01	-5.9544¤2E+01 -5.6718 5E+01	-7.4175885+00 -9.9170735+00	3.642202E+00 4.186036E+00	86.0224 84.9290	-7.164333E+00 -9.545615E+00	-5.979807E+01 -5.709041E+01	2.631687E+01 2.377240E+01
	#8.400000E-01	-6.796834E+01	-1.8351775+01	5.863905E+00	83.8063	-1.577709£+01	-6.858302E+01	2.640296E+01
	8.400000E-01	-4.430228E+01	-1.0875065+01	5.316324E+00	81.1772	-1.005089E+01	-4.512745E+01	1.753828E+01
	-5.000000E-01	-5.219732E+01	-1.854979E+00	-1.159811E-01	-89.8680	-1.854712E+00	-5.219759E+01	2.517144E+01
	5.000000E-01	-6.300009E+01	-1.532313E+00	4.698806E-01	89.5620	-1.528722E+00	-6.300368E+01	3.073748E+01

FEBRUARY 9, 1981 NASTRAN 12/15/80

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SUPCASE

NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF ARCH

PRESSURE LOAD

2.385691E+01 1.649943E+01 2.473421E+01 2.946532E+01 2.396674E+01 2.698074E+01 2.4523338+01 2.910010E+01 2.324976E+01 2.674320E+01 2.249555E+01 2.272161E+01 2.394936F+01 2.712283E+01 2.994441E+01 2.634947E+01 2.855802E+01 2.353685E+01 2.274145E+01 2.566935E+01 1.524863E+01 2.326350E+01 2.291653E+01 2.528101E+01 3.032630E+01 2.490167E+01 2.617012E+01 SHEAR a Ω ν Ο -5.318075E+01 -5.167436E+01 -5.511847E+01 -5.875412E+01 -6.517639E+01 -5.305960E+01 -6.231797E+01 -5.338224E+01 -6.152142E+01 -5.419591E+01 -5.941093E+01 -5.694573E+01 -5.416204E+01 -6.574087E+01 -4.136289E+01 -5.443650E+01 +6.428845E+01 -5.423213E+01 -6.405271E+01 -6.906928E+01 -4.163231E+01 -5.816388E+01 -5.347580E+01 -5.400206E+01 -6.306806E+01 -5.579286E+01 -5.860959E+01 MINOR PRINCIPAL STRESSES (ZERO SHEAR) ပ S -3.712344E+00 -2.703720E+00 -7.184983E+00 -4.792641E+00 -1.163689E+01 -7.642751E+00 -1.746257E+01 -9.413429E+00 -2.507581E+00 -1.665369E+00 -4.335571E+00 -3.321224E+00 -7.696390E+00 -5.924524E+00 -1.195464E+01 -8.718812E+00 -1.784215E+01 -9.713990E+00 -1.908384E-01 -4.399620E+00 -1.583181E+00 -6.916686E+00 -4.198722E+00 -8.719153E+00 -1.773059E+01 -1.113505E+01 -1.072782E+01 -1.312669E+01 z MAJOR w Σ ш ш 89.8095 88.2586 86.7491 86.3298 -89.7343 89.5661 -89.5271 88.5821 89.5356 86.6963 87.0330 85.4145 -8ª.8127 89.5296 89.6689 89.3109 83.1376 -89.8801 89.8481 88.3857 ٦ ۲ ANGLE RAL QUADRILATER/ 3.045028E+00 3.513209E+00 2.588497E+00 2.349004E+00 1.545030E-01 1.455937E+00 1.596246E+00 2.534213E+00 2.134098E+00 -2.345025E-01 4.593114E-01 1.439680E+00 3.769038E-01 2.343512E+00 3.817045E+00 1.826234E+00 1.325582E+00 3.840786E-01 1.667600E+00 3.733001E-01 -4.0482:3E-01 -1.134926E-01 -1.722969E-01 4.690474E-01 2.877588E-01 6.294177E-01 SHEAR-XY IN ELETENT COORD SYSTEM -1.2104075+01 -8.840560E+00 -1.910758E-01 -4.400041E+00 -3.7128915+00 -2.729924£+00 -1.1785515+01 -7.7423365+00 -1.7558095+01 -9.7918005+00 -2.508668E+00 -1.668847E+00 -4.338912E+00 -3.356859E+00 -7.699445E+00 -6.027403E+00 -1.8148285+01 -9.8199245+00 -4.200384E+00 -1.073539E+01 -7.229246E+00 -4.839404E+00 -1.583745E+00 -6.920517E+00 -8.756511E+00 -1.3129940+01 -1.778432E+01 -1.113961E+0 メーコないはつと ш Z u O STRESSES -5.318021E+C1 +6.164815E+01 -6.498047E+C1 -5.337890E+01 -6.148579E+01 -5.679631E+01 -5.404029E+01 -5.400043E+01 -6.306049E+01 -5.507420E+01 -5.870685E+01 -5.801425E+01 -5.337622E+01 -5.306852E+01 -6.231449E+01 -5.419296E+01 -6.5434735+01 -4.1196965+01 -5.443626E+01 -6.428803E+01 -6.4048HSE+01 -6.901506E+01 -4.162775E+01 -5.428157E+01 -5.575550E+01 -5.860635E+01 NORMAL-X 2 -S w S S w -5.000300E-01 5.000300E-01 -5.000000E-01 -5.000000E-01 5.000000E-01 -5.000000E-01 -5.000000E-01 -5.000000E-01 5.000000E-01 -5.000000E-01 5.000000E+01 -5.000000E-01 -5.000000E-01 5.000000E-01 -5.000000E-01 5.000000E-01 -5.000000E-01 5.000000E-01 -5.0000000E-01 5.000000E-01 -5.000000E-01 -5.000000E-01 α FIBRE DISTANCE <u>ب</u> ري 32 33 34 35 4 42 43 44 45 5 52 53 54 55 ELEMENT 10.

NASTR. STAFIC	NASTRAN COURSE STAFIC STRESS ANALYSIS	DEMO. PROB. 1A S OF RING-STIFFENED	A ENED CYLINDER		FEBRUARY	9, 1981 NAST	NASTRAN 12/15/80	PAGE
AXISY	AXISYMMETRIC PRESSURE LOAD	LOAD (COMPARE	TO PROB. 18)				SUECASE	m
ELEMENT ID.	SA 1 SB 1	S T R E S SA2 SB2	S S E S I N SA3 SB3	B A R E L E SA4 SB4	M E N T S AXIAL STRESS	(C B A R) SA-MAX SB-MAX	SA-MIN SB-MIN	M.ST
101	2.601:99E-01	-2.601199E-01 -2.601199E-01	0.0	00	-5.204877E+01	-5.178865E+01 -5.178865E+01	-5.230889E+01	
102	2.601199E-01 2.601199E-01	-2.601199E-01 -2.601199E-01	0.0	0.0	-5.204877E+01	-5.178865E+01 -5.178865E+01	-5.230889E+01 -5.230889E+01	
103	2.601199E-01	-2.601199E-01 -2.601199E-01	0.0	00.0	-5.204877E+01	-5.178865E+01 -5.178865E+01	-5.230889E+01	
104	2.601199E-01 2.601199E-01	-2.601199E-01 -2.601199E-01	0.0	0.0	-5.204877E+01	-5.178865E+01 -5.178865E+01	-5.230889E+01	
105	2.601199E-01 2.601199E-01	-2.601199E-01 -2.601199E-01	0.0	0.0	-5.204877E+01	-5.178865E+01 -5.178865E+01	-5.230889E+01	
141	-2.711327E-04 -2.711326E-04	2.711325E-04 2.711325E-04	0.0	0.0	-5.721378E+01	-5.721350E+01 -5.721350E+01	-5.721405E+01 -5.721405E+01	
142	-2.711327E-04 -2.711326E-04	2,711325E-04 2,711326E-04	0.0	0.0	-5.721378E+01	-5.721350E+01 -5.721350E+01	-5.721405E+01 -5.721405E+01	
143	-2.711326E-04 -2.711325E-04	2.711325E-04 2.711326E-04	0.0	00.0	-5.721378E+01	-5.721350E+01 -5.721350E+01	-5.721405E+01 -5.721405E+01	
144	-2.711326E-04 -2.711325E-04	2.711326E-04 2.711327E-04	0.0	0.0	-5.721378E+01	-5.721350E+01 -5.721350E+01	-5.721405E+01 -5.721405E+01	
145	-2.711326E-04	2.711326E-04 2.711327E-04	00.0	00.	-5.721378E+01	-5.721350E+01 -5.721350E+01	-5.721405E+01 -5.721405E+01	

PAGE

NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF RING-STIFFENED CYLINDER

	e	0 2)	MAX SHEAR	2.760263E+01 2.655645E+01	2.760263E+01 2.655645E+01	2.760263E+01 2.655645E+01	2.760263E+01 2.655645E+01	2.7602635+01 2.655645E+01	3.041310E+01 2.849698E+01	3.041310E+01 2.849698E+01	3.041310E+01 2.849698E+01	3.041310E+01 2.849698E+01	3.041310E+01 2.849698E+01	3.017338E+01 2.901373E+01	3.017338E+01 2.901373E+01	3.017338E+01 2.901373E+01	3.017338E+01 2.901373E+01	3.017338E+01 2.901373E+01	2.794059E+01 2.914027E+01
	SUBCASE	4 7 0 0	ERO SHEAR) MINOR	-5.371072E+01 -5.460744E+01	-5.371072E+01 -5.30744E+01	-5.371072E+01 -5.460744E+01	-5.371072E+01 -5.460744E+01	-5.371072E+01 -5.460744E+01	-5.808889E+01 -5.973127E+01	-5.808889E+01 -5.973127E+01	-5.808889E+01 -5.973127E+01	-5.808889E+01 -5.973127E+01	-5.808889E+01	-5.869012E+01 -5.968410E+01	-5.869012E+01 -5.968410E+01	-5.869012E+01 -5.968410E+01	-5.869012E+01 -5.968410E+01	-5.869012E+01 -5.968410E+01	-5.759500E+01 -5.656671E+01
		ELEMENTS	IPAL STRESSES (Z	1.494533E+00 -1.494533E+00	1,494533E+00 -1,494533E+00	1.494533E+00 -1.494533E+00	1.494533E+00 -1.494533E+00	1.494533E+00 -1.494533E+00	2.737303E+00 -2.737303E+00	2.737303E+00 -2.737303E+00	2.737303E+00 -2.737303E+00	2.737303E+00 -2.737303E+00	2.737303E+00 -2.737303E+00	1.656646E+00 -1.656646E+00	1.656646E+00 -1.656646E+00	1.656646E+00 -1.656646E+00	1.656646E+00 -1.656646E+00	1.656646E+00 -1.656646E+00	-1.713819E+00 1.713819E+00
		T E R A L YSTEM)	PRINC: ANGLE	0000.06-	90.0000	90.000.06	0000.06-	90.00.06-	0000.06-	-90.0000-	0000.06-	-90.0000	90.0000-	90.0000	90.0000-	0000.06-	0000.06	90.0000-	0000.06-
		U A D R I L A T	D SYSTEM SHEAR-XY	-1.023182E-12 -1.023182E-12	7.958079E-13 -6.707523E-12	7.958079E-13 -5.343281E-12	-7.958079E-13 -5.570655E-12	7.958079E-13 -2.614797E-12	-1.250555E-12 -5.684342E-13	-2.160050E-12 -1.477929E-12	-4.092726E-12 1.364242E-12	-2.387424E-12 -3.410605E-13	1.023182E-12 -1.023182E-12	3.979039E-13 -1.648459E+12	2.842171E-13 -1.080025E-12	-2.330580E-12 3.979039E-13	-2.444267E-12 9.663331E-13	1.477929E-12 -1.250555E-12	-1.136868E-13 -1.136868E-13
D CYLINDER	PROB. 18)	ENERAL Q	IN ELEVENT COOR NORMAL-Y	1.494533E+00 -1.494533E+00	1.494533E+00 -1.494533E+00	1.494533E+00 -1.494533E+00	1,494533E+00 -1,494533E+00	1.494533E+00 -1.494533E+00	2.737303£+00 -2.737303E+00	2.737303£+00 -2.737303£+00	2.737303E+00 -2.737303E+00	2.737303E+00 -2.737303E+00	2.737303E+00 -2.737303E+00	1.656646E+00 -1.656646E+00	1.656646E+00 -1.656646E+00	1.656646E+00 -1.656546E+00	1.656646E+00 -1.656646E+00	1.656848E+60 +1.656843E+00	-1.713819E+00 1.713819E+00
OF RING-STIFFENE	LOAD (COMPARE TO	S E S	STRESSES NORMAL-X	-5.371072£+01 -5.460744£+01	-5.371072E+01 -5.460744E+01	-5.371072E+01 -5.460744E+01	-5.371072E+01 -5.4607445+01	-5.371072E+01 -5.460744E+01	-5.808889E+01 -5.973127E+01	-5.8088895+01 -5.973127E+01	-5.808839E+01 -5.973127E+01	-5.808889E+01 -5.973127E+01	-5.808869E+C1 -5.973127E+C1	-5.869012E+C1 -5.968410E+01	-5.869012E+01 -5.968410E+01	-5.869012E+01 -5.968410E+01	-5.869012E+01 -5.968410E+01	-5.869012E+01 -5.968410E+01	-5.759500E+01 -5.656671E+01
STRESS ANALYSIS	RIC PRESSURE	S → S	FISRE DISTANCE	-5.000000E-01 5.000000E-01	-5.3000006-01 5.0000006-01	-5.0000001-01 5.000000E-01	-5.000000E-01 5.000000E-01	-5.000000E-01	-5.000000E-01 5.0000000E-01	-5.000000E-01 5.000000E-01	-5.000300E-01 5.000000E-01	-5.000000E-01 5.000000E-01	-5.000000E-01 5.000000E-01						
STATIC	AXISYMMET		ELEMENT ID.	-	8	m	4	w	=	12	13	4	<u>.</u>	21	22	23	24	25	31

SUECASE 3

NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF RING-STIFFENED CYLINDER

(COUAD2) ELEMERIS GENERAL QUADRILATERAL (IN ELEMENT COORDINATE SYSTEM) AXISYMMETRIC PRESSURE LOAD (COMPARE TO PROB. 18) z H STRESSES

	MAX	2.794059E+01	2.794059E+01	2.794059E+01	2.794059E+01	2.794377E+01	2.794377E+01	2.794377E+01	2.794377E+01	2.794377E+01	3.011876E+01	3.011876E+01	3.011876E+01	3.011876E+01	3.011876E+01
	SHEAR	2.914027E+01	2.914027E+01	2.914027E+01	2.914027E+01	2.911229E+01	2.911229E+01	2.911229E+01	2.911229E+01	2.911229E+01	2.895329E+01	2.895329E+01	2.895329E+01	2.895329E+01	2.895329E+01
	RO SHEAR)	-5.759500E+01	-5.759500E+01	-5.759500E+01	-5.759500E+01	-5.755685E+01	-5.755685E+01	-5.755685E+01	-5.755685E+01	-5.755685E+01	-5.857257E+01	-5.857257E+01	-5.857257E+01	-5.857257E+01	-5.857257E+01
	MINOR	-5.656671E+01	-5.656671E+01	-5.656671E+01	-5.656671E+01	-5.655526E+01	-5.655526E+01	-5.655526E+01	-5.655526E+01	-5.655526E+01	-5.957154E+01	-5.957154E+01	-5.957154E+01	-5.957154E+01	-5.957154E+01
	PAL STRESSES (ZERO	-1.713819E+00	-1.713819E+00	-1.713819E+00	-1.713819E+00	-1,669308E+00	-1.669308E+00	-1.669308E+00	-1.669308E+00	-1.669308E+00	1.664961E+00	1.564961E+00	1.664961E+00	1.664961E+00	1.664961E+00
	MAJOR	1.713819E+00	1.713819E+00	1.713819E+00	1.713819E+00	1,669308E+00	1.669308E+00	1.669308E+00	1.669308E+00	1.669308E+00	-1.664961E+00	-1.664961E+00	-1.664961E+00	-1.664961E+00	-1.664961E+00
SYSTEM)	PRINCIPAL ANGLE	0000.06-	0000.06-	0000.06-	90.0000	-90.0000-	-90.0000	-90.0000	-90.0000	-90.0000-	-90.0000-	90.0000	90.0000	90.0000	0000.06-
COORDINATE	SYSTEM	-1.705303E-12	-4.376943E-12	-2.557954E-12	2.273737E-13	-3.524292E-12	-2.955858E-12	-1.193712E-12	-1.705303E-12	-3.979039E-13	-3.126388E-13	5.684342E-14	-1.051603E-12	-2.103206E-12	1.136868E-13
	SHEAR-XY	2.387424E-12	3.808509E-12	3.581135E-12	2.273737E-13	-1.136868E-13	-3.637979E-12	-3.922196E-12	-3.069545E-12	-1.080025E-12	-3.126388E-13	-1.307399E-12	3.126388E-13	6.252776E-13	-5.684242E-13
(IN ELEMENT	IN ELEWENT COORD NORMAL-Y	-1.713819E+00 1.713819E+00	-1.713819E+00 1.713819E+00	-1.713819E+00 1.713819E+00	-1.713819E+00	-1.669308E+00 1.669308E+00	-1.669308E+00 1.669308E+00	-1.669308E+00 1.669308E+00	-1.669308E+00 1.669309E+00	-1.669308E+00 1.669308E+00	1.664961E+00 -1.664961E+00	1.664961E+00 -1.664961E+00	1.664961E+00 -1.664961E+00	1.664961E+00 -1.664961E+00	1.664961E+00 -1.664961E+00
	STRESSES	-5.759500E+01	-5.759500E+01	-5.759500E+01	-5.759500E+01	-5.755685E+01	-5.755685E+01	-5.755635E+01	-5.755685E+01	-5.755685E+C1	-5.857257E+01	-5.857257E+01	-5.857257E+01	-5.857257E+01	-5.857257E+01
	NORMAL-X	-5.656671E+01	-5.656671E+01	-5.656671E+01	-5.656671E+01	-5.655528E+01	-5.655526E+01	-5.655526E+01	-5.655526E+01	-5.655523E+O1	-5.957154E+01	-5.957154E+01	-5.957154E+01	-5.957154E+01	-5.957154E+01
	FIBRE DISTANCE	-5.000000E-01 5.000000E-01	-5.000000E-01	-5.000000E-01 5.000000E-01	-5.000.00E-01 5.000000E-01	-5.000000E-01 5.00000CE-01	-5.000300E-01 5.000300E-01	-5.000000E-01 5.000000E-01	-5.0000000E-01	-5.0000005-01 5.000000E-01	-5.000000E-01 5.000000E-01	-5.000000E-01 5.000000E-01	-5.000000E-01 5.000000E-01	-5.000000E-01 5.000000E-01	-5.000000E-01 5.000000E-01
	ELEMENT IO.	32	33	34	35	4	42	43	44	45	51	52	53	4	5

NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF ARCH

FIRST TWO LOADS COMBINED (ARCH PROBLEM)

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PAGE

FEBRUARY 9, 1981 NASTRAN 12/15/80

S MOCANS

2)	MAX	2.957300E+01	3.188614E+01	3.211293E+01	3.413570E+01	3.192379£+01	3.359350E+01	3.057462E+01	3.153540E+01	3.070450E+31	3.126435E+01	3.230414£+01	3.287573E+01
	SHEAR	4.107209E+01	3.802188E+01	4.142172E+01	3.883015E+01	4.148401£+01	3.862760E+01	4.118306E+01	3.810461E+01	4.071480E+01	3.766367E+01	4.009595E+01	3.703865E+01
0 V O O V	O SHEAR)	-5.536702E+01	-6.156315E+01	-5.827928E+01	-6.534591E+01	-6.046095E+01	-6.687862E+01	-6.176620E+01	-6.696613E+01	-6.283814E+01	-6.724600E+01	-6.340727E+01	-6.777513E+01
	WINOR	-8.680932E+01	-7.906371E+01	-9.110577E+01	-8.413055E+01	-8.996911E+01	-8.367851E+01	-8.614346E+01	-8.047863E+01	-8.532239E+01	-8.032519E+01	-8.758445E+01	-8.292527E+01
ELEMENTS	JAL STRESSES (ZERO	3.778978E+00	2.209140E+00	5.946571E+00	2.925494E+00	3.446626E+00	3.083880E-01	-6.169687E-01	-3.895324E+00	-1.429150E+00	-4.717294E+00	1.201016E+00	-2.023668E+00
	MAJOR	-4.665147E+00	-3.019959E+00	-8.262335E+00	-6.470245E+00	-7.001091E+00	-6.423303E+00	-3.777342E+00	-4.269403E+00	-3.892795E+00	-4.997851E+00	-7.392556E+00	-8.847966E+00
A T E R A L E	PRINCIPAL	-89.3859	-88.8853	-89.9684	89.7615	-89.6472	-89.5316	-89.7545	-89.8333	-89.8103	-89.8453	89.9757	89.8262
SYSTEM)	ANGLE	88.9833	87.0543	89.6297	88.6251	89.5257	88.3580	89.8309	89.3127	89.4051	88.2270	89.8865	89.6373
A D R I L /	SYSTEM	-6.338860E-01	-1.240365E+00	-3.540655E-02	2.841598E-01	-3.931683E-01	-5.492134E-01	-2.620588E-01	-1.835476E-01	-2.033537E-01	-1.687972E-01	2.738414E-02	1.995038E-01
	SHEAR-XY	1.457306E+00	3.902656E+00	5.353642E-01	1.862845E+00	6.857147E-01	2.212739E+00	2.430320E-01	9.140492E-01	8.454695E-01	2.329436E+00	1.587993E-01	4.689202E-01
ENERAL QU	IN ELEMENT COORD	3.772184E+00	2.1850065+00	5.946551E+00	2.9243115+00	3.444204E+00	3.0389825-01	-6.180918E-01	-3.895858E+00	-1.429H24E+00	-4.717750E+00	1.2C1004E+00	-2.024273E+00
	NORMAL-Y	-4.691009E+00	-3.220779E+00	-8.265795E+00	-6.5149555+00	-7.006775E+G0	-6.4867325+00	-3.778059E+00	-4.280368E+00	-3.901574E+00	-5.069955E+00	-7.392870E+00	-8.850935E+00
S E S E S	STRESSES	-5.536022E+01	-6.153901E+01	-5.827926E+01	-6.534473E+01	-6.039853E+01	-6.687413E+01	-6.176508E+01	-6.696560E+01	-6.283747E+01	-6.724554E+01	-6.340726E+01	-6.777453E+01
	NORMAL-X	-8.678346E+01	-7.886289E+01	-9.110231E+01	-8.408584E+01	-8.996342E+01	-8.361508E+01	-8.614275E+0:	-8.046765E+C1	-8.531361E+01	-8.025308E+01	-8.758414E+01	-8.292230E+01
STRES	FIBRE	-5.000000E-01	-5.000000E-01	-5.000000E-01	-5.000000E-01	-5.000000E-01	-5.000000E-01	-5.0000000E-01	-5.000000E-01	-5.000000E-01	-5.000000E-01	-5.0000000E-01	-5.000000E-01
	DISTANCE	5.000000E-01	5.000000E-01	5.000000E-01	5.000000E-01	5.000000E-01	5.000000E-01						
	ELEMENT IO.	-	α	-	12	12	22	31	35	44	42	£	52

STATI	NASTRAN COURSE DEMO. ; STATIC STRESS ANALYSIS OF ARCH	DEMO. PROB. 1A S OF ARCH			FEBRUARY	9, 1981 NAST	NASTRAN 12/15/80	PAGE
PRESS	PRESSURE LOAD						SUBCASE	-
EMENT ID.	\$41 \$81	S T R E S SA2 SB2	S S E S 1 N SA3 SA3 SB3	B A R E L SA4 SB4 SB4	EMENTS AXIAL STRESS	(C B A R) SA-MAX SB-MAX	SA-MIN SB-RIN	M.S.17
101	1.777819E+01 2.067983E+01	2.606363E+01 3.615829E+00	0.0	0.0	-2.958180E+01	-3.518169E+00 -8.901973E+00	-2.958180E+01 -2.958180E+01	
102	8.762021E+00 1.636086E+01	4.088217E+01 -2.398437E+01	0.0	0.0	-3.813125E+01	2.750919E+00 -2.177039E+01	-3.813125E+01 -6.211561E+01	
103	-4.769990E+00 5.381531E+00	4,504218E+01 -5.030657E+01	0.0	00	-5.389144E+01	-8.849261E+00 -4.850991E+01	-5.866143E+01 -1.041980E+02	
104	-1.685068E+01 -1.726711E+01	2.616520E+01 -4.987735E+01	0.0	0.0	-7.132793E+01	-4.516273E+01 -7.132793E+01	-8.817861E+01 -1.212053E+02	
105	-2.221661E+01 -6.496445E+00	-2.116933E+01 2.207008E+00	000	00.0	-7.742910E+01	-7.742910E+01 -7.522209E+01	-9.964571E+01 -8.392555E+01	
141	1.083077E+01 9.871705E+00	1.090796E+01 9.987181E+00	0.0	0.0	-4.195017E+01	-3.104221E+01 -3.196299E+01	-4.195017E+01 -4.195017E+01	
142	1.078128E+01 6.871819E+00	1.064428E+01 6.929305E+00	0.0	0.0	-4.353340E+01	-3.275213E+01 -3.660350E+01	-4.353340E+01 -4.353340E+01	
143	1.037027E+01 -1.032997E+00	9.860172E+00 -9.670713E-01	0.0	00.0	-4.827662E+01	-3.790635E+01 -4.827662E+01	-4.827662E+01 -4.930961E+01	
144	8.371822E+00 -1.709053E+01	8.063640E+00 -1.777677E+01	0.0	00.0	-5.948399E+01	-5.111216E+01 -5.948399E+01	-5.948399E+01 -7.726076E+01	
145	-3.717915E+00 -3.533586E+01	-4.215561E+00 -3.335410E+01	00.	00.	-7.773501E+01	-7.773501E+01	-8.195057E+01 -1.130709E+02	

NASTRAN COURSE - - - DEMO. PROB. 1A STATIC STRESS ANALYSIS OF ARCH

NASTRAN 12/15/80 9, 1981 FEBRUARY

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2.513115E-06 3.662154E-07 2.481576E-06 2.681364E-07 2.354964E-06 5.525209E-07 2.323447E-06 4.927143E-07 2.285697E-06 4.006063E-07 2.292054E-06 5.022008E-07 2.353174E-06 7.362708E-07 2.417186E-06 2.307751E-06 3.622615E-07 2.075416E-06 7.725342E-07 2.510909E-06 3.811957E-07 2.457752E-06 2.170141E-06 1.902198E-06 7.870924E-07 2.422601E-06 4.847683E-07 1.761596E-07 2.948161E-07 2.347695E-06 1.614915E-07 2.355293E+07 SHEAR/TWIST (C O U A D 2) PAGE -1.817060E-06 -5.207548E-09 -1.796728E-06 -5.735054E-08 -1.777645E-06 -1.659052E-07 -1.815106E-06 -4.041169E-07 -2.028859E-06 -6.031422E-07 -1.948322E-06 -1.862370E-06 -6.819032E-07 -1.958995E-06 4.265145E-08 -1.919128E-06 3.363339E-08 -1.864395E-06 -1.215725E-07 -1.765073E-06 -7.340003E-07 -1.903045E-06 -1.201164E-07 SUBCASE -1.941480E-06 1.037374E-07 -1.930232E-06 1.882201E-08 -1.9166865-06 -2.494470E-07 -1.9:6873E-06 4.187432E-08 PRIN. STRNS./CURVS. (ZERO SHEAR/TWIST) 1.371247E-07 5.309216E-08 5.379033E-07 5.473134E-07 5.267189E-07 5.C80518E-07 4.769474E-07 9.808395E-08 3.243143E-07 5.647927E-07 5.400963E-07 3.718738E-07 4.869535E-07 .128145E-07 2.130464E-07 9.063108E-08 5.519142E-07 5.108788E-07 4.285669E-07 3.057462E-07 5.195564E-07 3.646520E-07 3.9106505-07 89.8529 89.3141-24.6456 87.9835 85.0007 77.4566 89.8437 89.2273 87.6462 -54.8826 79.6799 89.7986 -5.0685 85.5035 89.8187 85.7846 87.7815 -42.8460 84.3927 -16.9582 82.7572 88.9031 QUADRILATE COORDINATE SYSTEM) 89.1421 ANGLE 1.533565E-08 -5.077468E-08 1.208888E-08 -1.457683E-07 5.562295E-08 -3.734947E-07 1.607518E-07 3.979573E-07 -5.668061E-08 1.371155E-08 -6.773296E-08 6.692388E-08 -1.697155E-07 1.983791E-07 -1.657815E-07 4.488218E-07 5.311284E-08 7.315837E-07 2.650105E-07 1.765555E-08 -6.735334E-08 7.359220E-08 -1.645023E-07 -4.713230E-08 9.977250E-07 5.244554E-07 1.816215E-07 -1.610353E-07 4.758125E-07 3.012883E-08 3.392236E-07 ELEMENT COORD SYSTEM RWAL-Y SHEAR-XY ENERAL 5.378878E-07 4.580126E-09 5.263660C-07 2.832906E-08 5.0522196-07 4.5954145-07 2.133225E-07 2.337335E-08 5.647740E-07 5.396450E-07 4.828763E-07 1.464379E-07 6.719263E-08 5.513831E-07 .695543E-08 5.195322E-07 -1.187832E-07 3.690324E-07 1.108572E-07 5.103277E-07 4.250489E-07 1.083137E-07 2.9240785-07 1.115748E-07 5.2803745-08 1.068893E-07 STRNS . CURVS IN -1.948304E-06 4.872372E-07 -1.926155E-05 7.711632E-03 -1.894653E-C6 -2.474896E-07 1.817045E-06 5.375257E-07 -1.796395E-06 3.496842E-07 -1.774815E-06 8.690640E-09 -1.797700E-06 -4.025136E-07 -1.917868E-06 -4.933869E-07 -1.941028E-06 3.416008E-07 -1.795761E-06 -6.584647E-07 -1.958964E-06 4.2084845-07 -1.945322E-06 3.116093E-07 -1.915610E-06 -1.851055E-06 -1.191904E-07 -1.734838E-06 -7.337118E-07 -1.903020E-06 3.633188E-07 1.204446E-07 NORMAL-X ű 2 4 5 22 23 24 25 ELEMENT 5 31

PRESSURE LOAD						SUBCASE	
STRAINS/CURV	ATURES I	N GENERA	L Q U A D R I NT COORDINATE SY	LATERA STEM)	A L E L E M E	N T S (C 0	U A D 2)
ELEMENT	STRNS. CURV	S. IN ELEMENT C	OORD SYSTEM	PRIN. STRNS	S./CURVS. (ZERO	SHEAR/TWIST)	MAXIMU'A
ID.	NORMAL-X	NORMAL-Y	SHEAR-XY	ANGLE	MAJOR	MINOR	SHEAR/TWIST
32	-1.8815925-06	4.667615E-07	6.098297E-08	69.2562	4.671574E-07	-1.881988E-06	2.349145E-06
	2.920945E-07	-1.174450E-07	-9.345209E-08	-6.4271	2.973580E-07	-1.227085E-07	4.200665E-07
33	-1.836005E-06	3.677528E-07	1.322634E-07	88.2827	3.697355E-07	-1.837988E-06	2.207723E-06
	1.449820E-07	-1.159713E-07	-1.216440E-08	-1.3345	1.451237E-07	-1.161130E-07	2.612367E-07
34	-1.758964E-06	2.314716E-07	2.066268E-07	87.0365	2.368200E-07	-1.764212E-06	2.001032E-06
	-1.141596E-07	-8.842541E-08	4.33433CE-08	60.3494	-7.608889E-08	-1.264962E-07	5.040727E-08
35	-1.646330E-06	7.757583E-08	2.843203E-07	85.3173	8.922027E-08	-1.657975E-06	1.747195E-06
	-6.862356E-07	-3.274007E-08	-4.031573E-08	-88.2349	-3.211887E-08	-6.868568E-07	6.547379E-07
41	-1.902163E-06 3.165974E-07	5.072898E-07	9.741718E-09 -6.013054E-08	89.8842	5 072996E-07 3.186559E-07	-1.902172E-06 -1.225123E-07	2.409472£-06 4.411683E-07
42	-1.875933E-06 2.800502E-07	4.460606E-67	4.484372E-08 -1.598570E-07	89.4468 -11.0456	4.462770E-07 2.956527E-07	-1.876149E-06 -1.294065E-07	2.322426E-06 4.250593E-07
43	-1.823047E-06	3.387237E-07	1.178947E-07	88.4393	3.403296E-07	-1.824653E-06	2.164983E-06
	1.872263E-07	-1.068867E-07	-1.704394E-07	-15.0462	2.101350E-07	-1.297949E-07	3.399299E-07
44	-1.742554E-06	2.051059E-07	2.139584E-67	86.8655	2.109643E-07	-1.748412E-06	1.959376E-06
	-5.923239E-08	-8.122328E-08	2.075607E-08	21.6727	-5.510820E-08	-8.534747E-08	3.023928E-08
45	-1.637354E-C6	6.702163E-08	2.445421E-07	85.9175	7.574861E-08	-1.646081E-06	1.721829E-06
	-7.246421E-07	-3.523431E-08	1.725369E-07	82.9746	-2.460312E-08	-7.352733E-07	7.106701E-07
51	-1.955783E-06	5.171028E-07	1.963251E-09	89.9773	5.171032E-07	-1.955783E-06	2.472886E-06
	2.863025E-07	4.178117E-08	-2.359855E-08	-2.7562	2.868706E-07	4.121312E-08	2.456575E-07
52	-1.929652E-06	4.4991445-07	1.285919E-08	89.8452	4.499318E-07	-1.929670E-06	2.379602E-06
	2.722087E-07	8.021948E-08	-5.558317E-08	-8.0732	2.761507E-07	7.627742E-08	1.998733E-07
53	-1.876336E-06	3.363749E-07	3.974431E-08	89.4855	3.365534E-07	-1.875514E-06	2.21306RE-06
	2.366530E-07	1.272326E-07	-2.961044E-08	-7.5711	2.386209E-07	1.252648E-07	1.133561E-07
54	-1.796599E-06	2.070351E-07	7.408529E-08	88.9412	2.077197E-07	-1.797283E-06	2.005003E-06
	5.129405E-08	1.172724E-07	8.159695E-08	64.4793	1.367503E-07	3.181607E-08	1.049343E-07
ភេ	-1.699425E-06	7.114025E-08	8.842599E-08	88.5704	7.224361E-08	-1.700528E-06	1.772772E-06
	-8.464583E-07	5.236632E-08	1.121986E-07	86.4423	5.585418E-08	-8.499462E-07	9.058003E-07

8/15/79

MWMM MM MW MWIMN LEVEL 17.5.1 MWMWW MW MW MW SYSTEM GENERATION DATE T. C. L. L. MUMMUMMINIM MUNICA MAM MM NENTA MINIM Z. MM MMMM SAMPLANCE. MINIM **FINAMENTAL** M MWW ENTERNACIN MIN Ξ WILLIAM TO THE TOTAL OF THE TOTAL CONTROL OTHER CONTROL OF THE TOTAL CONTROL OTHER CONTROL OT MARKARANAMAN MARKATAN MINANTARIA PARTO GATO ATTO TO TOTA DE LA CALLE - ATTO TO DESTRUCTO DE DESTA DE LA CONTRACTO DE SANTARIA MINANTARIA WIND WIND MICHARIMAN CONTRAPORT TO MESSESSES OF THE MANAGEMENT CONTROL - PROPERTY OF THE PROPERTY MULTIPOLITICITAMICIMINAM MCMMMMMCC COMPANY CONTROL CONT MICHAEL - NAM BENNIM NICH COLONIAN MICHAEL COLONIAN - PARTEM MICHAEL COLONIAN COLONIAN MICHAEL COLONIAN MICH DAM DODGE SERVICE CONTROL OF CON M----MICH FRANKING 777 / //WWW. 2 MUNICIPAL M Microsophia activities . NIME: V MACCOLORIGIA MAN CONTRACTOR AND A CO Mention AND THE PERSON AND THE Party Control of the METHODOTOM Management (1/1) WAY THE TANK

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NASTRAN COURSE - - DEMO. PROB. 18 RING-SIIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 14, SUBCASE 3)

E C H D D E C X CONTROL CASE

TITLE=NASTRAN CCURSE - - - DEMO, PROB, 18
SUBITILE=RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD
LABEL=CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 1A, SUBCASE 3)
SET 7 = 15.35
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NASTRAN COURSE - - - DEMO. PROB. 18 RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD CONICAL SHE

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NASTRAN COURSE - - - DEMO, PROB. 18 RING-STIFFENES CYLINDER WITH UNIFORM PRESSURE LOAD

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NASTRAN 8/15/79

DECEMBER 27, 1979

CONICAL SHELL ELEMENTS (COMPARE TO PROSLEM 14, SUBCASE 3)

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NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

103. 18 DECEMBER 27, 1979 NASTRAN

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8/15/79

NASTRAN COURSE - - - DEMO. PROS. 18 RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 14, SUBCASE 3)

*** USER WARNING VESSAGE 2015, EITHER NO ELEVENTS CONNECT INTERNAL GRID POINT OR IT IS CONNECTED TO A RIGID ELEMENT OR A GENERAL ELEMENT.

2001 35 STARTING WITH ID *** SYSTEM INFORVATION MESSAGE 3113, EMCPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE EMGOLD IS PROCESSING ELEMENTS OF TYPE = 35, BEGINNING WITH ELEMENT ID *** SYSTEM INFORMATION MESSAGE 3107.

TPYAD--NULL WATRIX PRODUCT TPYAD--NULL MATRIX PRODUCT TPYAD--NULL MATRIX PRODUCT

205) 0 S AVG 0 PREFACE LOOPS GROUPS = z ***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL C AVG = 6 PC AVG = 0 SPILL ADDITIONAL CORE= -28431 C MAX = 11 PCMAX = 0 PC

MPNAD--NULL MATRIX PRODUCT GPYAD--NULL MATRIX PRODUCT METHOD 2 NI,NBR PASSES = 1.EST. TIME

'n

*** USER INFORMATION MESSAGE 3035

FOR LOAD 1 EPSILON SUB E = -8.4760391E-13

MPYAD--NULL MATRIX PRODUCT METHOD 2 T ,NBP PASSES = 1.EST. TIME = METHOD 2 NI,NBW PASSES = 1.EST. TIME =

- 2

*** USER WARNING MESSAGE 2076, SDR2 DUTPUT DATA BLOCK NO. 1 15 PURGED

*** USER WARNING MESSAGE 2077, SDR2 OUTPUT DATA ELOCK NO. 2 IS PURGED

*** USER WARNING MESSAGE 2078, SOR2 DUTPUT DATA BLOCK NO. 3 IS PURCED

CONICAL

## C	CYLIND	- DEMJ. PROS. 18 DER WITH UNIFORM	PRESSURE	LOAD	DECEMBER	27, 1979 NAS	STRAN	8/15/79
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NASTRAN 8/15/79 DECEMBER 27, 1979 NASTRAN COURSE --- DEMO. PROB. 18 RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

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NASTRAN COURSE RING-STIFFENED	NASTRAN COURSE RING-STIFFENED CYLIND	DEMO.	PROS. 18 UNIFORM PRESSURE LOAD	040	DECEMBER	27, 1979	NASTRAN 8/15/79	91/51/
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NASTRAN 8/15/79 DECEMBER 27, 1979

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NASTRAN COURSE - - - DEMO. PROB. 18 RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 14, SUBCASE 3)

CONSTRAINT SINGLE-POINT u. O FORCES

T3 -7.377821E-09 12 Ξ HARMONIC 0 SECTOR-ID POINT-ID RING-ID 65

NASTRAN COURSE --- DEMO. PROB. 18 RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE LOAD

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 11, SUBCASE 3)

	S F	ESSE	SINAX	W M A S - S I	ETRICC	ONICAL	SHELL ELEMENTS (((CCONEAX)	
ELEMENT ID. H	HARMONIC	POINT	FIBRE Distance	STRESSES NGRHAL-V	IN ELEMENT COOR!	RD SYSTEM SHEAR-UV	PRINCIPAL STRESSES (ZERO SHE/ ANGLE MAJOR MIN	HEAR) MAXIMUM MINOR SHEAR	Σ Σ
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15	8		-5.000000E-01	0.0	0.0	000			
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NASTRAN COURSE - - - DEMO, PROB. 18 RING-STIFFENED CYLINDER WITH UNIFORM PRESSURE 104D

CONICAL SHELL ELEMENTS (COMPARE TO PROBLEM 14, SUBCASE 3)

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DECEMBER 27, 1979 NASTRAN 8/15/79

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STRESSES IN AXIS-SYMMETRIC CONICAL	FIBRE	*C* HARBONIC ANGLE DISTANCE NORTALLY NORTALLO SHEAR-UV	35 135.0000 -5.000006-01 -1.000.027	5.000000E-01 1.007292E+01 -5.414459E+01 0.0	35 180.0000 -5.0000000 -1 0031276.00 1-1 00000000000000000000000000000000	5.000000E-01 1.007292E+01 -5.4:4459E+01 0.0

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8/15/79 SYSTEM GENERATION DATE

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ID NASTRAN, DEMO APP DISP SOL 1,0 TIME 10 CEND

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TITLE=NASTRAN COURSE --- DEMO. PROB. 1C

SUBTITLE=SYMMETRY EXAMPLE

DISH=ALL

LOAD=ALL

LOAD=ALL

SUBCES 1

CABEL=SYMMETRY

SPC=32

SUBCES 2

LOABEL=SYMMETRY

SPC=32

SUBCES 2

LOABEL=SYMMETRY

SPC=33

SUBCES 33

SUBCES 33

LOABEL=COMBINED SOLUTION - LOADED SIDE

SUBCES 15

SUBSEQ=0.5.-0.5

18

BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

NASTRAN COURSE - - - DEMO, PROB, 10 SYMMETRY EXAMPLE

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SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE FRECISION ELEMENTS OF	
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++NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM++

	S AVG	PREFACE LOOPS .
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***USER INFORMATIO	⊩	ADD

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NASTRAN COURSE - - - DEMO, PROB, 10 SYMMETRY EXAMPLE

DECEMBER 27, 1979 NASTRAN 8/15/79 PAGE

*** USGR INFORVATION MESSAGE 3035

FOR LOAD 1 EPSILON SUB E ≈ -2.6366174E-12

MPKAD--NULL TATRIX PRODUCT METHID 2 T ,NGR PASSES = 1,EST, 71ME = .0

99) 0 S AVG 0 PREFACE LOOPS ***USER INFORMATION MESSAGE 3023--DARAMETERS FOR SYMMETRIC DECC...POSITION OF DATA BLOCK KLL (N = 1 C AVG = 7 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE= -28454 C MAX = 9 PCMAX = 0 PC GROUPS =

WETHOD 1 NT,NER PASSES = 1,EST. TIME =

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*** USER INFORMATION MESSAGE 3035

FOR LOAD

2 EPSILGN SUB E = -2.33497:0E-12

METHOD 2 I , NBR PASSES = 1,EST. TIME =

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*** USER WARNING TESSAGE 2076, SOR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2078, SDR2 GUTPUT DATA BLOCK NO. 3 IS PURSED

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SUBCASE 1

VECTOR

SYTTHELTA

83 -6.0 -1.1539978-05 -1.2148718-04 -7.2148718-06 -1.3739878-05 9.7721608-05 1.37398478-06 1.3739848-04 1.3739848-04 1.37388-05 0.0 6.7277348-07 6.727748-07 6	
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	82	0.0	-9.038278E-05		-9.721702E-05	-8.522828E-05	-6.5:8304E-05	-4.853780E-05	-2.719257E-05	-7.8:7328E-06	2.485357E-06	1.116198E-05	1.229579E-05	0.0	0.0	-1.026786E-04			-7.738095E-05	-3.869048E-05	0.0
VECIOR	ā	0.0	7.45024E-05	9.430125E-05	8.069701E-05	6.709277E-05	5.8416148-05	4.8083468-05	3. F03472E-05	2.244991E-05	-2. H3H323E-06	-2.772256E-05	-2.802834E-05	0.0	0.0	1.026788E-04	1.220238E-04	8.333333E-05	4.464286E-05	2.232143E-05	0.0
ACEMENT	~; -	0.0	3.3121156-07		-5.128829E-05		-6.5 G.L. 8E-05	-3.8695446-05	-1.7576 255-05	-2.871770E-06	-4.143201E-06		-3.312115E-07		0.0	1.7347235-17	3,4694175-17	-5.543155E-05	-9.970238E-05	-8.296131E-05	-7.738095E-05
734816	12	0.0	2.0954198-05	6.5483705-05		1.7750435-04						2.3 05945-05	8.1475725-06	c.5	0.0	2.9141875-05	8.8789585-05	2.1465778-04	3,3234135-04	3.3234136-04	3.3234136-04
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SUBCOM 11

NASTRAN COURSE - - - DEMO. PROB. 1C SYMMETRY EXAMPLE

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	R2	0.0	-9.0382786-05	-1.108618E-04	-9.721702E-05	-8.5228245-05	-6.548304E-05	-4.653780E-05	-2.719257E-05	-7.847328E-06	2.485357E-06	1.116198E-05	1.2295795-05	0.0	0.0	-9.038278E-05	-1.108618E-04	-9.721702E-05	-8.522828E-05	-6.588304E-05	-4.653780E-05
V E C T G R	ir.	0.0	7.445024E-05	9.430125E-05	8.0-97016-05	6.709177E-05	5.8410145-05	4.808346E-05	3.609472E-05	2.2449-41E-05	-2.6:6:532-06	-2.772256E-05	-2.602834E-05	0.0	0.0	7.465024E-05	9.430125E-05	8.069701E-05	6.709277E-05	5.841614E-05	4.808346E-05
A C E T E N T	13		3.312115E-07	6.6242 08-07	-5.1,88298-05			-3.809048E-05			-4.1.32.1E-06					3.31211_6-07		-5.1288295-05		-6.538438E-05	
4 J G S : C	12	0.0	2.0051196-05	6.5-83708-05	1.2-32:45-04	10-3810811.					8.773536E-05				0.0	2.095419E-05	6.548370E-05	1.259218E-04	1.7750436-04	1,7183755-04	1.681708E-04
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NASTRAN COURSE DEMO SYMMETRY EXAMPLE COMBINED SOLUTION - LOADED	POINT 10. TY 5 25

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** LICNAB **.

NOMERICAL MECHANICS DIVISION (184), DAVID W. TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER, BETHESDA, MARYLAND 20084, U.S.A. Today is 12,27.79 ii.04.20. THE FOLLOWING COMMEN'S ARE READ BY BANDIT, WHICH RESEQUENCES THE GRID POINTS FOR REDUCED RMS WAVEFRONT (IF POSSIBLE)
AND GENERATES SEGGP CARDS.
TO BE READ BY BANDIT, \$ CARDS MUST APPEAR SOMEWHERE BEFORE THE BEGIN BULK CARD. GRID CARDS ARE IGNORED. SGRIC SO SCONFIG 6 CEND TITLE-NASTRAN COURSE - - - DEMO, PROB. 1D SUBTITLE-LINEAR STEADY-STATE HEAT CONDUCTION (ARCH PROBLEM) 42. 7227 016073 046705 065000 SECONDS NUMBER OF GRID POINTS APPEARING ON CONNECTION CARDS MAXIMUM NODAL DEGREE BEFORE ANY NODES ARE IGNORED LENGTH OF OPEN CORE (DECIMAL WORDS)
LENGTH OF OPEN CORE (OCTAL)
BEGINALN) OF OPEN CORE (OCTAL)
FIELD LENGTH (OCTAL)
GRID POLY LINIT
NOOAL DEUREE LINIT
PACKING DENSITY (INTEGERS/WORD)
\$DIMENSION VALUE ECHO OF DATA DECK THROUGH BESIN BULK CARD 1- ID NASTRAN,DEMO 2- APP HEAT 3- SUL 1,0 4- TIME 10 WORKING STOPAGE PARTITIONING -SPCFCPCE=ALL FORCE=ALL BEGIN BOLK TO SET UP CONNECTION TABLE YES 36 314 7.476 9 VERTION 9, UPDATED 4 DEC 1978 **SSEQUENCE** DISFALL 1040=29 MAX WAVEFRONT AVG MAVEFRONT RMS WAVEFRONT BEFORE RESEQUENCING -BANDAIDIH PROFILE

AFTER RESEQUENCING BY CUTHILL-MCKEE (CM) ALGORITHM -

303

MAX WAVEFRONT

BANDWIDTH

PAGFILE

AVG WAVEFRONT

7.214 7.567 527

AFTER RESEQUENCING BY G1885-POOLE-STOCKMEYER (GPS) ALGORITHM = -8440A1074 11
PACFILE 293
MAK AANEFRONT 9
AND AANEFRONT 7.213
CP TIME 315

BEST SEQUENCE OF THOSE OSTAINED (BASED ON THE CRITERION SELECTED) WILL BE USED.

*** FIELD 10 OF FIRST SEGGE CARD CONTAINS THE NEW GRID FOINT BANDWIDTH AND RMS WAVEFRONT.

INTEGER ADDED TO NEW SEQUENCE NUMBERS = 0

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SECOP CARDS GENERATED	SEGGP	SECO	SECOP	SEDOP	SECOP	SECGP	SEDOP	SEÇGP	SEGGP	SEGGP	SEIGP
ECHO OF											

*** ELEMENT COUNTS FOR DATA DECK - .
CBAR 10
CQUAD2 30

*** BANDIT SUMMARY - - -

.476 6.976 .755 7.213 RMS WAVEFRONT 131 AFTER 293 G SEGGP CARDS CM AND GPS 7.476 3.6 3.4 4.6 BEFORE NUMBER OF UNIQUE EDGES
MATRIX DENSITY, PERCENT
NUMBER OF POINTS OF ZERO DEGREE
NUMBER OF RIGID ELEMENT MPC EQUATIONS
NUMBER OF RPC EQUATIONS PROCESSED MUTBER OF GRID FOINTS (N)
NUTBER OF ELETENTS (NON-RIGID)
NUTBER OF RIGID ELETENTS PROCESSED
NUTBER OF COMPONENTS MAKINGH MAVEFRONT (C-MAX) AVERAGE AAVEFRONT (C-AVG) RTS AALEFRONT (CHRMS) MAXITUT NODAL DEGREE MINITUM NODAL DEGREE BANDAIDIH (B) PROFILE (P) METHCO USED CRITERION

ALL BANDIT STATISTICS USE GRID POINT. RATHER THAN D-O-F. CONNECTIVITY AND INCLUDE MATRIX DIAGONAL TERMS. * * *

STATISTICS SUCH AS CHMAX, CHMVG, CHMMS, AND NISHCHDE BACH BE MULTIPLIED BY THE AVERAGE NUMBER OF DHOFF PER GRID POINT Before estimating nastgan time and core requirements.

* * *

CONFIG = SECONDS 6400 CDC MODEL 0 4 NASTRAN LEVEL 17 DECCRPOSITION TIME ESTIMATES (REAL, SYMWETRIC, NO SPILL) FOR A4G, NO. OF DOF/NODE - 1 2 3 4 5 5 DECOMP. TIME EST. - 1 1 1 2 3 * * *

TOTAL CP TIME IN BANDIT END OF BANDIT JOB.

2.057 SECUNDS

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Windschild Report From Process Account of Report Process Account of Re SYSTEM GENERATION DATE MATERIAL CONTROL OF THE CONTROL OF T

8/15/79

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THE FOLLOWING COMMENTS ARE READ BY BANDIT, WHICH RESEQUENCES THE GRID POINTS FOR REDUCED RMS WAVEFRONT (IF POSSIBLE)
AND GENERATES SEOGP CARDS,
TO BE READ BY BANDIT, \$ CARDS MUST APPEAR SOMEWHERE BEFORE THE BEGIN BULK CARD.

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NASTRAN 8/15/79 DECENDER 27, 1979

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NASTAN CCCAR --- DEVO. PROS. TO LINEAR STEADY-STATE HEAT CONDUCTION (ARCH PRUBLEY)

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*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-URDER DECK.

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... HAY, SURVE F - - DEMUL PROB. 10A. STEADY-STATE HEAT CONDUCTION (ARCH PROBLEM)

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NASTRAN COURSE - - - DEMO. PROB. 10 LINEAR STEADY-STATE HEAT CONDUCTION (ARCH PROBLEM)

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NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

101	-	-
34 STARTING WITH ID	18 STARTING WITH ID	WITH ELEMENT ID =
*** SYSTEM INFORMATION MESSAGE 3113, ENGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE	*** SYSTEM INFORMATION RESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE	*** SYSTEM INFORMATION MESSAGE 3107. ENGOLD IS PROCESSING ELEMENTS OF TYPE = 18, BEGINNING WITH ELEMENT ID =
YSTEM INFORMATION MESSAGE 3113,	YSTEM INFORMATION RESSAGE 3113,	YSTEM INFORMATION MESSAGE 3107.
*	*	*

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11 Z	O SPILL GROUPS =	PC GROUPS ≖
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C DECOR	r	3 3
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***USER INFORMATION WESSAGE 3023-PARAWETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK HALL	TIME ESTIMATE= 1	ADDITIONAL CORE= -28464

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NASTRAN COURSE - - DEMO. PROB. 1D LINEAR STEADY-STATE HEAT CONDUCTION (ARCH PROBLEM)

PAGE NASTRAN 8/15/79 DECEMBER 27, 1979

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*** USER INFORMATION MESSAGE 3035

1 EPSILON SUB E = -2.7941241E-13 FOR LCAD

0.0 WETHOD 1 NT.NBR PASSES = METHOD 2 T.NBR PASSES =

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK PLTPAR

*** SYSTEM AARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT GUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK GPSETS

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK ELSETS

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NASTRAN COURSE - + - DEMO. PROB. 10 LINEAR STEADY-STATE HEAT CONDUCTION (ARCH PROBLEM)

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-	s	3.200000E+01	3.200000E+01	3.200000E+01	3.200030E+01	3.200000E+01	3.200000E+01
-	s	5.153322E+01	5.237100E+01	5.505218E+01	6.020407E+01	6.946321E+01	8.732445E+01
21	Ś	6.953532E+01					
23	s	7.5017645+01	8.4c506dE+01	9.903949E+01	1.219971E+02		
31	s	8.47F727E+01	8.676235E+01	9.297142E+01	1.039910E+02	1.208986E+02	1.452729E+02
41	s	9.631585E+01	9.862633€+01	1.057014E+02	1.179472E+02	1.359078E+02	1.597948E+02
51	s	1.031261E+02	1.055946E+02	1.131183E+02	1.260313E+02	1.448273E+02	1.701268E+02
61	S	1.054268E+02	1.079457E+02	1.156128E+02	1.287419E+02	1.478066E+02	1.733949E+02
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NASTRAN 8/15/79

DECEMBER 27, 1979

LOAD VECTOR

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10+4 VALUE
ID+3 VALUE
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NASTRAN COURSE - - - DEMO. PROB. 1D LINEAR STEADY-STATE HEAT CONDUCTION (ARCH PROBLEM)

+ PROBLEM)

ID+5 VALUE -3.076753E-02 ID VALUE ID+1 VALUE ID+2 VALUE ID+3 VALUE ID+4 VALUE -7.332322E-03 -1.529365E-02 -1.730652E-02 -2.117432E-02 -2.812566E-02 CONSTRAINT P 0 I N T SINGLE n L FORCES TYPE S POINT 10.

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NASTRAN COURSE - - - DEMO. PROB. 1D LINEAR STEADY-STATE HEAT CONDUCTION (ARCH PROBLEM)

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AND FLUXES	Y-FLUX										
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DIENTS	X-FLUX	.0			.0		-1.9804735-04	-6.06438CE-04	-1.0496455-03	-1.539486E-03	-2.047471E-03
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ITE ELEMENT	X-GRADIENT	.0	.0	0,	.0	٥.	2.760241E-01	8.452097E-01	1.462920E+00	2.145526E+00	2.8536195+00
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NASTRAN COURSE - - - DEMO. PROS. 10 Lingar Steady-State Heat Corouction (Arch Problem)

		TE ELEMENT	TEUPERA	TURS GRA	DIENTS AN	D FLUXES	
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5	00400	.601442E	2.713 4525-60		-1 149362E-04	-1.947261E-03	
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4	00AD2		4.104205E+00		-3.988230E-04	-2.944767E-03	
5	QUAD2	.06	5.7492241+00		-7.6548695-04	-4.160947E-03	
-	\$040¢	.409911	2.2931445+00		-1.0116116-64	-1.645??4E-03	
12	9,0402	4.4621105-01	2.4675 114.00		3	-1.770561E-03	
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21	20400	.107124	1.932-25E+00		-1.511861E-04	-1.386402E-03	
22	00102		\circ		-4.7135505-04		
23	20400		2.278529E+00		.498022E-	-1.634916E-03	
24	C 1402	٦٩.	u:		342314E-	-1,845920E-03	
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3,	\$C# \\$.57	•		8-195915-	-1.050359E-03	
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33	90402	. 38	1.657893E+00		-9.970917E-04	-1,195713E-03	
34	20402	.08	1.8103405+00		4	-1.2989196-03	
35	C0405	ω.	1.8450r9E+00		?	-1.3242825-03	
4.1	00405	w.	8.011551E-01		-2.0:1820-E-04	-6.178788E-04	
42	QUAD2	8.7200635-01	8.3907:95-01			-6.450841E-04	
43	20402	.5027715	9.644341E-01		15	-6.95:205E-04	
44	00402	.195527E	1.082772E+00		.5752916-0	10	
45	Q400	.9379	1.203220E+00		.1080095-	.6331	
51	QUAD2	6	2.907JB2E-01		•	-2.08c046E-04	
52	GUAD2	.073674E-	3.028:64E-01		-6.510361E-04	-2.172923E-04	
53	CUADS	ŝ	253200		E-0	-2.334171E-04	
54	QUAD2	.261476	α		-1.622609E-03	-2.5515945-04	
55	QUADS	3.039618E+00	3.904653E-01		-2.180926E-03	-2.801553E-04	

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NASTRAN CUURSE — — DEMO. PROB. 16 2-0 POISSON EQUATION (TORSION OF TRIANGULAR PRISM)

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TITLE=NASTRAN COURSE - - - DEMO. PROB. TE SUBTITUE=2-D POISSON EQUATION (TORSION OF TRIANGULAR PRISM) SPC=13 LOAD=12 DISPEREDSALL STRESSALL BEGIN BULK

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DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/8 9/2
NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT,(U)
FEB 81 6 C EVERSTINE, M M HURWITZ
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NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

*** USER INFORMATION MESSAGE 3028, B = 11 C = 0 R = 10

*** USER INFORMATION MESSAGE 3027

-00 11 11 11 1.EST. TIME : 1.EST. TIME : METHOD 2 NT, NBR PASSES = METHOD 2 NT, NBR PASSES = METHOD 2 NT, NBR PASSES = 0 DECOMPOSITION TIME ESTIMATE IS

*** USER INFORMATION MESSAGE 3035

FOR LOAD 1 EPSILON SUB E = -1.1918880E-13

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NASTRAN COURSE - - - DEMO. PROB. 1E 2-D POISSON EQUATION (TORSION OF TRIANGULAR PRISM)

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NASTRAN COURSE - - - DEMO. PROB. 1E 2-D POISSON EQUATION (TORSION OF TRIANGULAR PRISM)

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NASTRAN COURSE – – - DEMO. PROB. 1E 2-0 POISSON EQUATION (TORSION OF TRIANGULAR PRISM) S

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STRESS VALUE ELEMENT ID GRID NUMBER

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-1,4440959E-01	-1.3821839E-01	-1,2974992E-01	-1.2966321E-01

MAXIMUM VALUES FOR STRESS SIG-Y (SUBCASE

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NASTRAN COURSE — — - DEMO. PROB. 1E 2-D POISSON EQUATION (TORSION OF TRIANGULAR PRISM)

DEMO. PROB. 1E

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NASTRAN EXECUTIVE CONTROL DECK ECHO

ID NASTRAN, DEMO APP DISPLACEMENT SGL 2.0 TIME 5 CEND ~

PAGE

FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)

CARD
COUNT
TITLE=NASTRAN COURSE - - - DEMO. PROB. 2
2 SUBTITLE =STATIC AVALYSIS WITH INERTIA RELIEF
3 LABEL =FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)
4 SPC = 1
5 SCT 1 = 10
6 SET 100 = 1 THRU 5 EXCEPT 3
7 SPCFORCE = 1
9 SET 100 = 1 THRU 5 EXCEPT 3
10 DISP = 100
11 STRESS = ALL
12 FORCE = ALL
13 OLOAD(SORTZ) = ALL
14 BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

PR08. 2	RELIEF
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FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)

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DECEMBER 27, 1979 NASTRAN 8/15/79

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NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

*	SYSTEM	*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE	SE 3113,	EMGPRO	PROCESSIN	G SINGLE	PRECISION	ELEMENT	S 0F T	'PE	30 STARTING WITH ID	ING WI	TH 10	91
:	SYSTEM	*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE	SE 3113,	EMGPRO	PROCESSIN	G SINGLE	PRECISION	ELEMENT	S 0F T	/PE	1 STARTING WITH ID	I M ON I	1H IS	-
.	SER IN	***USER INFORMATION MESSAGE 3023PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL (N = 1 C AVG = 2 PC AVG = 0 SPILL GROUPS = 1 ADDITIONAL CORE= -28494 C MAX = 4 PCMAX = 0 PC GROUPS = 0 PC G	3023PA E= -2849	RAMETERS 1 4	FOR SYMMETRIC C AVG = C MAX = METHOD 3	ETRIC DE	SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL AVG = 2 PC AVG = 0 SPILL GROUPS MAX = 4 PCMAX = 0 PC GROUPS METHOD 3 T ,NBR PASSES = 1,EST. TIME = .0	ON OF DATA C AVG = PCMAX = S = 1,EST	A BLOCI 0 0 ST. TI	K KLL SPILL G PC G	BLOCK KLL (N = 0 SPILL GROUPS = 0 PC GROUPS = 1.0 Time = 0.0		5) 0 S AVG = 0 PREFACE LOOPS =	S AVG

NASTRAN COURSE - - DEMC. PROB. 2 STATIC ANALYSIS WITH INERTIA RELIEF

FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)

PAGE

8/15/79

NASTRAN

DECEMBER 27, 1979

*** USER INFORMATION MESSAGE 3035

0 EPSILON SUB E = 1.2644055E-14 FOR LOAD

0 0. 0000 1.EST. TIME 1.EST. TIME WEIGHD 3 T. WAR PASSES = 1
WEIGHD 1 NI.NE. PASSES = 1
WEIGHD 1 NI.NE. PASSES = 1
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MEIGHD 1 NI.NER PASSES = 1 WEITHOD I NI,NAR PASSES = MPYAD--NULL MAIRIX PRODUCT MEITHOD 3 I ,NBR PASSES = *** USER INFORMATION MESSAGE 3075

1 EPSILON SUB E = -2.0666220E-14 LOAD FOR

1, EST. TIME MPYAD--NULL MATRIX PRODUCT METHOD 3 T ,NBR PASSES =

0

30 *** SYSTEM WARNING MESSAGE 2184, STRESS OR FORCE REQUESTS FOR ELEMENT TYPE WILL NOT BE HONDRED AS THIS ELEMENT IS NOT A STRUCTURAL ELEMENT.

*** SYSTEM WARNING MESSAGE 3022

ROUTE. IS REQUIRED AS INPUT AND IS NOT CUTPUT BY A PREVIOUS MODULE IN THE CURPENT DMAP DATA BLOCK PLTPAR

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT CUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK GPSETS

*** SYSTEM WARNING MESSAGE 3022

DATA BLOCK ELSETS IS REGUIRED AS INPUT AND IS NOT CUTPUT BY A PREVICUS MODULE IN THE CURRENT DMAP ROUTE.

DECEMBER 27, 1979 NASTRAN 8/15/79	SUBCASE
NASTRAN COURSE DEWO. PROB. 2 Static analysis with inertia relief	FIVE ELEMENT FRAMEROD ELEMENTS (CONC. MASSES AT 1,2.5)

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	12	o. 0	-1.457107E-04	-3.621320E-04	-1.457107E-04
	ī	0.0	7.500000E-05 -1.457107E-04 0.0	0.0	-7.500000E-05
	TYPE	U	IJ	IJ	₍₎
	POINT 10. T	-	7	4	S

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DECEMBER 27, 1979 NASTRAN 8/15/79	SUBCASE	e e
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NASTRAN COURSE DEMO. PROB. 2 Static analysis with inertia relief	FIVE FLEMENT FRAMEROD ELEMENTS (CGNC. MASSES AT 1,2,5)	POINT ID. TYPE T1 T2 T3 0.0 2 G 0.0 0.0 0.0 4 G 0.0 -1.000000E+03 0.0 0.0 5 G 0.0 0.0 0.0 0.0 0.0

NASTRAN COURSE --- DEMO. PROB. 2 Static analysis with inertia relief FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)

DECEMBER 27, 1979 NASTRAN 8/15/79

PAGE

SUBCASE 1

83

FORCES OF SINGLE-POINT CONSTRAINT

0.0 2 0.0 ~ 0.0 13 T1 T2 -3.637979E-12 1.000000E+03 0.0 TYPE G POINT 10.

NASTRAN CJURSE - - - DEMJ. PROB. 2 STATIC ANALYSIS WITH INERTIA RELIEF FIVE ELEMENT FRAME--ROD ELEMENTS (CONC. MASSES AT 1,2,5)

DECEMBER 27, 1979 NASTRAN 8/15/79

SUBCASE 1

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TORQUE (0080) R O D E L E M E N T S (C F ELEMENT AXIAL ID. 3.535534E+02 4 7.071068E+02 z ... FORCES TORQUE 000 AXIAL FORCE 3.535534E+02 7.07106BE+02 -7.500000E+02 ELEMENT ID. - ო თ

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PAGE	SE 1	TORSIONAL STRESS
8/15/79	SUBCASE 1	STOR STOR
NASTRAN 8/15/79 PAGE		AXIAL SAFETY TO STRESS MARGIN 0.0
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27.		AXIA STRES .53553
DECEMBER 27, 1979		ELEMENT SID. 2
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NASTRAN COU STATIC ANAL	FIVE ELEMEN	ELEMENT ID. 1

NASTRAN SYSTEM PARAMETER ECHO

NASTRAN FILES= (NPTP, OPTP, PLT2)

PAGE

RIGID FORMAT SERIES P

CDC 6000 SERIES 6430 / 6500

LEVEL 17.5.7

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- 12/15/80

SYSTEM GENERATION DATE

- MANAGEMENT CONTROL OF THE CONTROL

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NASTRAN

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TIME 10
\$\$ THE FOLLOWING CARD REQUESTS THIS RUN TO BE CHECAPOINTED.
CHAPNT YES
\$\$ THE FILES PARAMETER ON THE NASTRAN CARD IS NOT AVAILABLE
\$\$ ON SPERRY/NASTRAN.

NASTRAN EXECUTIVE CONTROL DECK ECHO

ECHO OF FIRST CARD IN CHECKPOINT DICTIONARY TO BE PUNCHED OUT FOR THIS PROBLEM RESTART NASTRAN, DEMO , 2/9/81, 60020,

NASTRAN COURSE - - - DEMO. PROB. 3 NORMAL MODES ANALYSIS INVERSE POWER METHOD CARD

COUNT

TITLE=NASTRAN COURSE - - - DEMO. PROB. 3

SUBTITLE=NORMAL MODES ANALYSIS

A LABEL=INVERSE PONER METHOD

SPC= 11

METHOD=41

DISP= ALL

B EGIN BULK

NASTRAN COURSE - - - DEMO. PROB. 3 NORMAL MODES ANALYSIS

INVERSE POWER METHOD

PAGE

FEBRUARY 9, 1981 NASTRAN 12/15/80

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NASTRAN COURSE - - DEMO. PROS. 3 Normal modes analysis

FEBRUARY 9, 1981 NASTRAN 12/15/80

PAGE

INVERSE POWER METHOD

INPUT BULK DATA DECK ECHD ENDDATA 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .

9

TOTAL COUNT= 51

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

+STEEL +P31 +P31A

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PROB.	
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NASTRAN COURSE NORMAL MODES ANALYSIS	INVERSE POWER METHOD

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MO. PROB. 3 FEBRUARY 9, 1981

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NASTRAN 12/15/80

NASTRAN COURSE --- DEMO. PROB. 3 NORMAL MODES ANALYSIS

INVERSE POWER METHOD

SORTED BULK DATA ECHO

CCJNT . 1 . . CCJNT ENDDATA

2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10

..NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**

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PAGE

NASTRAN 12/15/80

FEBRUARY 9, 1981

INVERSE POWER METHCO CONTINUATION OF CHECKPOINT DICTIONARY

ហ FILE = REEL = FLAGS = 0, XVPS

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1022	1022	1022	1022	1022	1022 1022 1022 1022
CONTAINS	CONTAINS CONTAINS CONTAINS	CONTAINS	CONTAINS CONTAINS CONTAINS	CONTAINS	CONTAINS CONTAINS CONTAINS
BLOCK BLOCK 8	BLOCK BLOCK BLOCK 10	5100K	14 0 6LOCK 0 BLOCK	15 0 BLDCK	16 9LOCK 17 BLOCK 18 0 BLOCK
6 BLOCKSEACH 1, FILE = BLOCKSEACH 1, FILE =	BLOCKSEACH 1, File : BLOCKSEACH 1, FILE : BLOCKSEACH 1, FILE :	1, F: LE = 1, FILE = 1, FI	1. FILE = 0. FILE = BLOCKSEACH 0. FILE = BLOCKSEACH 0. FILE = BLOCKSEACH 0. FILE = BLOCKSEACH	24 FILE = 0. FILE = BLOCKSEACH	1. FILE = BLOCKSEACH 1. FILE = BLOCKSEACH 1. FILE = 0. FILE = 0. FILE = 0. FILE = BLOCKSEACH 0. FILE = BLOCKSEACH 0. FILE = BLOCKSEACH
NUMBER REEL = 1 REEL = 1	REEL EL	NUMBER REEL #	NUMBER REEL * REEL * O REEL *	NUMBER REEL = REEL =	NUMBER REEL = 1 REEL = 1 REEL = 0 REEL = 0
DMA FL FL	CONTAINS FLASS = 0. DT CONTAINS FLASS = 0. CONTAINS FLASS = 0. FLASS = 0. FLASS = 0.	AT DMS.	AT DMAP SEQUENCE FLAGS = 0, FLAGS = 0, PAR CONTAINS FLAGS = 0, ETS CONTAINS FLAGS = 0, ETS CONTAINS	AT DMAP SEQUENCE, FLAGS = 0, FLAGS = 0, T CONTAINS	T DMAP SEQUENCE T CONTAINS ECT CONTAINS ECT CONTAINS FLAGS = 0.
ER GPL EQE	FILE GPDT BGPDT FILE BGPDT SIL FILE SIL XVPS	⊢	REENTER AT C XVPS , PLTPAR , FILE PLTPAR GPSETS , FILE GPSETS ELSETS ,	REENTER AYVPS COTT FILE GPTT	REENTER AT EST FILE EST GPECT TILE GPECT XVPS GEI FILE GEI
иш 4 п	6 , 6	5 5.	13. 14. 15.	18. 19.	2 2 3

*** SYSTEM INFORWATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE 27, 28.

REENTER AT DMAP SEQUENCE NUMBER 34 KELM . FLAGS = 0. REEL = 1. ZAME. B

KDICT .	ū	REEL =	# FILE :	20			1	
FILE KDICT			BLOCKSEACH BLOCK CONTAINS 1022 WORDS.	9.00 S.E.O.	CONTAINS	1022	WORDS.	
MELM.	CONTAINS	**************************************	1, File = 21 BLOCKSEACH BLOCK CONTAINS 1022	BLOCK	CONTAINS	1022	WORDS.	
MOICT .	FLAGS = 0.	REEL =	1, FILE =	22				
FILE MOICT	CONTAINS	-	BLOCKSEACH BLOCK CONTAINS 1022	BLOCK	CONTAINS	1022	WORDS.	
, SAVX	FLAGS = 0,	REEL =	1, FILE =	23				
REENTER AT	DMAP SEQUENCE	NUMBER	37					
KG3×	FLAGS = 0.	REEL =	1, FILE =	24				
FILE KGGX	CONTAINS	8	2 BLOCKSEACH BLOCK CONTAINS 1022 WORDS.	BLOCK	CONTAINS	1022	WORDS.	
GPST.	FLAGS = 0,	REEL =	1, FILE =	25				
FILE GPST	CONTAINS	-	BLOCKSEACH BLOCK CONTAINS 1022	BLOCK	CONTAINS	1022	WORDS.	
, SAVX	FLAGS = 0.	REEL =	1, FILE =	26				
REENTER AT	DMAP SEQUENCE NUMBER	NUMBER	41					
MGG.	FLAGS = 0.	REEL =	1, FILE =	27				
FILE MGG	CONTAINS	-	BLOCKS EACH BLOCK CONTAINS 1022 WORDS.	BLOCK	CONTAINS	1022	WORDS.	
XVPS ,	FLAGS = 0,	REEL =	1, FILE =	28				
REENTER AT	DMAP SEQUENCE NUMBER	NUMBER	47					
KGGX	FLAGS = 4.	REEL =	1, FILE =	24				
FILE KGGX	CONTAINS	0	O BLOCKSEACH BLOCK CONTAINS 1022 WORDS.	BLOCK	CONTAINS	1022	WORDS.	

INVERSE POWER METHOS

ADDITIONS TO CHECKPOINT DICTIONARY

WORDS.	WORDS.	WORDS.	WORDS.	WORDS.		WORDS.	WORDS?	MORDS.	WORDS.	WORDS.	WORDS.	у С С С					¥ORDS.	WORDS.	((WORDS.
1022	1022	1022	1022	1022	1022	1022	1022	1022	1022	1022	1022	1022	1022	1022			1022	1022	6	1022
CONTAINS	CONTAINS	CONTAINS	CONTAINS	CONTAINS	CONTAINS	CONTAINS	CONTAINS	CONTAINS	CONTAINS	CONTAINS	CONTAINS	4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	CONTAINS	CONTAINS			CONTAINS	CONTAINS		CONTAINS CONTAINS
24 BLOCK 29	30 BLOCK 31	B:0	8100K	BLOCK	BLOCK	BLCCK	BLOCK	BLOCK	BLOCK	BLOCK	BLOCK	40 420 24	27 27 BLOCK	27 BLOCK	32	<u>ო</u>	31.0	a	9.8 2.0	BLOCK
FILE = LOCKSEACH FILE =	57 FILE = LOCKSEACH FILE =	0, File = BlocksEACH	O, FILE 5 BLOCKSEACH O FI!F =	BLOCKSEACH O. FILE #	SLOCKSEACH BLOCKSEACH	O, FILE = BLOCKSEACH	BLOCKSEACH	BLOCKSEACH	CASEACH	CAST-EACH	BLOCKSEACH	65 1. File = BIOCKALLEACH	1. FILE = BLOCKSEACH	1, FILE = BLOCKSEACH	FILE =	73 F1.E =	FILE =	0, FILE = BLCCKSEACH	76 FILE =	BLOCKSTTEACH 1, FILE : BLOCKSTTEACH
0 BLC	- 18 -	0	0	0 0		0	0	0	0	0 0 0 0	0 810	÷ ä		0	-	· -	9.0	0. 0 BL0	- i	9.5
REEL "	UNGEL EEL	" ! !!!!!	א מי ה הי	E E E	E٦	א ה ש ה ש ה ש ה	ו ו ע נו ע נו		י נו ה ו נו	י יי ט ע	ר ר ר	NUMBER REEL =	REEL =	REEL =	REEL =	NUNBER REEL =	REEL =	REEL =	NUMBER REEL =	REEL =
FLAGS = 4, CONTAINS FLAGS = 0,	DMAP SEQUENCE FLAGS = 0. CONTAINS FLAGS = 0.	FLAGS = 0, CONTAINS	FLAGS = 0. CONTAINS FLAGS = 0.	14 1	FLAGS = 0, CONTAINS	FLAGS = 0. CONTAINS	CONTAINS	A I A	FLAGS = 0. CONTAINS	1	CONTAINS	DWAP SEQUENCE FLASS = 4,	FLASS = 4, CONTAINS	FLAGS = 4, CONTAINS	FLAGS = 0,	QUE 0 =	FLAGS = 0, CONTAINS	FLASS = 0, CONTAINS	DMAP SEQUENCE FLAGS = 0.	CONTAINS FLAGS = 0. CONTAINS
KGG FILE KGG XVPS	REENTER AT USET FILE USET XVPS	KRR FILE KRR	FILE KLR	FILE DW MLR FILE DW	. ¥	G: FILE GM	FILE RG	FILE GO	FILE KFS	FILE QG	FILE ASET	REENTER AT			KVPS .	REENTER AT	KFF FILE KFF	MFF FILE MFF	α ι ω :	KER KAS
42,	444, 45,	47,	4 4 8 0	50.	51,	52,	, n ,	u .	υ υ .	, ,	. / c	58,	.09	61,	62,	63, 64.	65,	.99	67,	.69

			S AVG LOOPS	S AVG	S AVG	S AVG	S AVG LOGPS	
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			LAMA SPILL PC	LAWA SPILL PC	LAMA SPILL PC	C LAWA SPILL PC	SPILL SPILL PC	
*ORDS.	*ORDS. *ORDS. *ORDS.	WORDS.	BLOCK LAWA 0 SPILL 0 PC	BLOCK LAWA 0 SPILL 0 PC	BLOCK LAMA 0 SPILL 0 PC	BLOCK	SLOCK 0 0 TIN	WORDS. WORDS.
1022 46	1022 WG 1022 WG 1022 WG	1022 WC	DATA = =	DATA ==	DATA = =	DATA ==	DATA E = 1. EST.	1022 WC
			ION OF PC AVG PCMAX	DECCMPOSITION OF 4 PC AVG 5 PCMAX	DECOMPOSITION OF 4 PC AVG 5 PCMAX	SECOMPOSITION OF 4 PC AVG 5 PCMAX	DECOMPOSITION OF 4 PC AVG 5 PCMAX 1,NBR PASSES = ,NBR PASSES =	
CONTAINS	CONTAINS CONTAINS CONTAINS	CONTAINS	11804	0511	POSIT	00511	POSITION PC PC PASSES PASSES	CONTAINS CONTAINS CONTAINS
وڊ 12019 2 <i>7</i>	BL C C C C C C C C C C C C C C C C C C C	39 BLOCK 40	OECOMPOSITION C 4 PC AV 5 PCMA	DECCM 4 5	DECOMI 4 5	SECOMI 5 5	DECOMI 4 5 NT, NBR 1, NBR	41 BLOCK 42 ELOCK 43 BLOCK
11 E = 11	CXS-EACH CXS-EACH CXS-EACH CXS-EACH CXS-EACH CXS-EACH CXS-EACH CXS-EACH		SYMMETRIC AVG = WAX =	SYMMETRIC AVG = MAX =	SYMMETRIC AVG = MAX =	SYMMETRIC AVG = WAX =	3 - 8	
1. BLOCKS- 1. FI	80 BLOCKSEACH 1, FILE = BLOCKSEACH 1, FILE = BLOCKSEACH 1, FILE = BLOCKSEACH 1, FILE =	100 1. FILE = BLOCKSEACH 1. FILE =						104 FILE = BLCCKSEACH 1. FILE = BLCCKSEACH 1. FILE = FILE = BLCKSEACH
" " " " " " " " " " " " " " " " " " "		~ " " "	S FO	RS FOR C	RS FOR C	ű	RS FOR	
REEL	REEL RELL	REEL S	AMETE	AMETE	AMETE	AMETE	AMETE	NUMBER REEL REEL REEL REEL REEL REEL REEL R
A I N S	0 CENCENCENCENCENCENCENCENCENCENCENCENCENC	QUENCE = 0. AINS = 0.	3PARAMETER 1 -23722	23PARAMETERS 1 -23722	3PARAMETER 1 -23722	:3PARAMETERS 1 -23722	3PARAMETERS 1 -23722	ALINS
FLAGS CONT FLAGS	FLAGS FLAGS	DWAP SE FLAGS CONT FLAGS	INFORMATION MESSAGE 302 TIME ESTIMATE= ADDITIONAL CORE=	PLAGS CONTY CONTY FLAGS CONTY FLAGS CONTY FLAGS CONTY				
MFF.	K K F F T A A T A A A A A A A A A A A A A A	R AT D ED'	ION MESSAGE 30. TIME ESTIMATE= IDITIONAL CORE=	WESSA ESTI TONAL	MESSA E ESTI IONAL	MESSA E ESTI IONAL	MESSA E ESTI IONAL	A . 4 . 4 .
WFF FILE MI XVPS	X X X E E E E E E E E E E E E E E E E E	REENTER EED FILE EE	ATION MESSA TIME ESFI ADDITIONAL	ATION TIME	ATION TIME ADDITI	ATION TIME ADDITI	ATION MESSA TIME ESTI ADDITIONAL	MENTE LE LE LE PERTE
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70.	72.	78 79 80	**USER I	*USER I	**USER I	*USER I	JSER I	81, 83, 84,
			1 * * *) * *) * * *		**•USER	

FEBRUARY 9, 1981 NASTRAN 12/15/80

NASTRAN COURSE - - - DEMO. PROB. 3 NORMAL MODES ANALYSIS

INVERSE POWER METHOS

ADDITIONS TO CHECKPOINT DICTIONARY

REEL = 1, FILE = 44 1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS. REEL = 1, FILE = 45 OEIGS , FLAGS = 0, FILE OEIGS CONTAINS XVPS , FLAGS = 0, 85, 86,

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INVERSE POWER METHOD

(INVERSE POWER METHOD) SUMMARY ANALYSIS EIGENVALUE

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•	•	•	•	•		•	•	•	•
•	•		•	•	•	•		•	•
NUMBER OF EIGENVALUES EXTRACTED	NUMBER OF STARTING POINTS USED	NUMBER OF STARTING POINT MOVES	NUMBER OF TRIANGULAR DECOMPOSITIONS	TOTAL NUMBER OF VECTOR ITERATIONS .	REASON FOR TERMINATION	LARGEST OFF-DIAGONAL MODAL MASS TERM			NUMBER OF OFF-DIAGONAL MODAL MASS TERMS FAILING CRITERION

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	GENERALIZED STIFFNESS	2.742442E+01 2.180999E+02 8.583220E+02 2.433031E+03
	GENERALIZED MASS	5.655112E-03 5.808644E-03 5.98775E-03 6.249210E-03
NVALUES	CYCLIC FREQUENCY	1.104429E+01 3.083972E+01 6.025770E+01 9.930736E+01
REAL EIGENVALUES	RADIAN FREQUENCY	6.939331E+01 1.937717E+02 3.786103E+02 6.239665E+02
	EIGENVALUE	4.815432E+03 3.754747E+04 1.433458E+05 3.893342E+05
	EXTRACTION ORDER	4 W CI +
	MODE NO.	-α α4

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METHOD 1 T , NBR PASSES = 1, EST. TIME =

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INVERSE POWER METHOD

ADDITIONS TO CHECKPOINT DICTIONARY

WORDS.	WGRDS.	WCRDS.
1022	1022	1022
CONTAINS	CONTAINS	CONTAINS
46 BLOCK 47 BLOCK 18	49 300.K 8100.K	50 BLOCK 51 BLOCK
112 1. FILE = 46 BLOCKSEACH BLOCK CONTAINS 1022 WORDS. 1. FILE = 47 BLOCKSEACH BLOCK CONTAINS 1022 WORDS. 1. FILE = 48	R 121 = 1, File = 69 = 0, File = 0 0 BLOCKSEACH 3LOUK CONTAINS 1022 WGRDS. = 0. File = 0 0 BLOCKSEACH BLOCK CONTAINS 1022 WGRDS.	125 1, FILE = 50 BLOCKSEACH BLOCK CONTAINS 1022 WORDS. 1, FILE = 51 BLOCKSEACH BLOCK CONTAINS 1022 WORDS. 1, FILE = 52
11. B.LC 1.		
NC38ER REEL = 1	NUTSER REEL = 0 REEL = 0	NUMBER SERVER SE
REENTER AT DWAP SEQUENCE NUMBER PHIG , FLADS = 0, REEL = FILE PHIG CONTAINS QC	REENTER AT DUAP SEQUENCE NUMBER XVPS SIP SIP FLE SIP CONTAINS FILE BGPDP CONTAINS FILE BGPDP FILE BGPDP	REENTER AT DMAP SEQUENCE NUMBER BGPOP , FLAGS = 0, REEL = FILE BGPOP CONTAINS SIP FLAGS = 0, REEL = XVPS , FLAGS = 0, REEL =
REENTER AT PHIG FILE PHIG GO FILE QG XVPS	REENTER AT XVDS . SID . FILE SID . FILE BGDDP . FILE BGDDP	REENTER AT BGDDD , FILE BGPDP SIP , FILE SIP , XVPS ,
87. 88. 89.	99. 93.	95, 96, 97,

NASTRAN COURSE - - - DEMO, PROB. NORMAL MODES ANALYSIS

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INVERSE POWER METHOD EIGENVALUE = 4.815432E+03

2 ă О Z. œ O O u > z 00000000000000000000 0000000000000000000 w G ... 0.0 1.812109E-21 3.61304SE-21 6.8364552E-21 1.236473E-20 1.236473E-20 1.857569E-20 1.857569E-20 1.857569E-20 1.858517E-20 1.858517E-20 1.858517E-20 2.98571E-20 2.133803E-20 2.133803E-20 2.281175E-20 $\begin{smallmatrix} \mathsf{u} \\ \mathsf{d} \\ \mathsf{o} \\ \mathsf{o}$ 0-044007890-044007890-POINT

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NASTRAN 12/15/80

9, 1981

FEBRUARY

ANALYSIS	METHOD	2 0 TT 1 D 1 TT 1
NORMAL MODES A	INVERSE POWER	

3.754	4747E+04	REAL EIG	GENVECT	Ο Ζ	5	
TYPE T1		12	± 5	2	R2	R3
0.0		0.0	0.0	0.0	0.0	0.0
G -2.841736E-21		6.769309E-02	0.0	0.0	0.0	2.4971135-02
G -5.665951E-21		2.301428E-01	0.0	0.0	0.0	3.795774E-02
G -8.455233E-21		4.2884328-01	0.0		0.0	3.9658708-02
G -1.119238E-20		6.1082735-01	0.0	0.0	0.0	3.162030E-02
G -1.386053E-20		7.331271E-01	0.0	0.0	0.0	1.6282185-02
-1.644322E-20		7.688795E-01	0.0	0.0	0.0	-3.201886E-03
G -1.892452E-20 7	7	.000963E-01	0.0	0.0	0.0	-2.3311845-02
G -2.128915E-20 5	ហ	.3~360.1E-01	0.0	0.0	0.0	-4.060504E-02
G -2.352252E-20 3.	(C)	.033807E-01	0.0	0.0	0.0	-5.2175C8E-02
G -2.561057E-20 2.	ζ.	917995E-02	0.0	0.0	0.0	-5.6046505-02
-2.754131E-20 -	7	2.432330E-01	0.0	0.0	0.0	-5.143885E-02
-2.830196E-20	14	-4.721841E-01	0.0	0.0	0.0	-3.8854525-02
-3.088194E-20	9	-6.215020E-01	0.0	0.0	0.0	-1.9972585-02
-3.227153E-20 -	9	.658181E-01	0.0	0.0	0.0	2.640227E-03
-3.346215E-20 -	ກ	5.939408E-01	0.0	0.0	0.0	2.596280E-02
G -3.444647E-20 -4	4	.098583E-01	0.0		0.0	4.703882E-02
-3.521842E-20 -	7	1.310669E-01	0.0	•	0.0	6.351274E-02
-3.577323E-20 2		.156322E-01	0.0	0.0	0.0	7.411529E-02
G -3.610749E-20 6	9	.008235E-01	0.0	0.0	0.0	7.904515E-02
-3.621914E-20 1	-	.000000E+00	0.0	0.0	0.0	8.021846E-02

9, 1981 NASTRAN 12,15/80 FEBRUARY

## E A L E I G E N V E C T O R N O . 3 T1	NASTRAN COURSE NORMAL MODES ANALYSIS	RSE S ANALYSIS	DEMO. PROB.	က		FEBRUARY	9, 1981	NASTRAN 12,15/80
10. TYPE 1.357540E-20 -1.2.2547E-01	INVERSE POWE EIGENVALUE	ER METHCD = 1.43349	58E+05	E A L E I	E 2 < E C →	z	ო	
G 1.357540E=20 -1.2.2547E=01 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		TYPE	11	12	13	۳.	82	R3
C	-	IJ	0.0	0.0	٥.٥		0.0	0.0
G 2.706710E-20 -3.95511E-01 0.0 0.0 G 4.039192E-20 -6.4884695-01 0.0 0.0 G 6.621382E-20 -7.0344061E-01 0.0 0.0 G 6.621382E-20 -7.0344061E-01 0.0 0.0 G 7.855771E-20 -4.55741E-01 0.0 0.0 G 1.017015E-19 3.147740E-01 0.0 0.0 G 1.017015E-19 3.147740E-01 0.0 0.0 G 1.223470E-19 6.7276034E-01 0.0 0.0 G 1.223470E-19 6.7276034E-01 0.0 0.0 G 1.32430E-19 6.7274034E-01 0.0 0.0 G 1.3476277E-19 -2.3116440-02 0.0 0.0 G 1.541659E+19 -3.876426E-01 0.0 0.0 G 1.54659E+19 -4.727451E-01 0.0 0.0 G 1.54659E-19 -6.436602E-01 0.0 0.0 G 1.724909E-19 -8.2	7	v	1.357540E-20		၁.ပ		0.0	-4.465526E-02
G 4.039192E=20 -6.46844848E=01 0.0 0.0 G 6.66770E=20 -7.74140.fE=01 0.0 0.0 G 7.855171E=20 -7.51440.fE=01 0.0 0.0 G 7.855171E=20 -7.9 GA7CE=02 0.0 0.0 G 1.017015E=19 3.11576E=02 0.0 0.0 G 1.123705E=19 6.0 GA7CE=02 0.0 0.0 G 1.123705E=19 6.0 GA7CE=02 0.0 0.0 G 1.123705E=19 6.0 GA7CE=01 0.0 0.0 G 1.23406E=19 6.0 GA7CE=01 0.0 0.0 G 1.34506E=19 6.0 GA7CE=01 0.0 0.0 G 1.345077E=19 -2.314644E=01 0.0 0.0 G 1.54659E=19 -3.87456E=01 0.0 0.0 G 1.54659E=19 -3.87456E=01 0.0 0.0 G 1.56456E=19 -4.72745E=01 0.0 0.0 G 1.724909E=19 -4.326236E=0	က	IJ	2.7067106-20	-3.435511E-01	0.0		0.0	-5.6809025-02
G 6.621382E=20 -7.71440.E=01 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	4	IJ	039192E-	-6.484645-01	0.0		0.0	-4.108798E-02
G 6.621332E-20 -7.0TH147E-01 0.0 G 9.621332E-20 -7.0TH147E-01 0.0 G 9.62135E-19 -7.0TH147E-01 0.0 G 1.123705E-19 -7.0TH167E-01 0.0 G 1.123705E-19 -7.0TH167E-01 0.0 G 1.35590E-19 -7.0TH167E-01 0.0 G 1.594537E-19 -7.0TH167E-01 0.0 G 1.594590E-19 -8.0TH167E-01 0.0 G 1.594590E-19 -8.0TH167E-01 0.0 G 1.734599E-19 -8.0TH167E-01 0.0	2	o	346770E-	-7. TA140 15-01	0.0		0.0	-6.840534E-03
C C C C C C C C C C	9	IJ	621382E-20	31-18:0	0.0		0.0	3.3184495-02
G 1.233470E=19 3.11574E=01 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	7	Ø	855171E-20		0.0		0.0	6.5710355-02
G 1.23705E-19 3.115740E-01 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	80	()	.040528E-20	30110 6	0.0		0.0	8.032250E-02
G 1.223470E-19 6.0 40 12E-01 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	on	IJ	1.017015E-19	11711111	٥.٠		0.0	7.223278E-02
G 1.223470E-19 7.2.034E-01 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	0	IJ	1.123705E-19	50.00	0.0		0.0	4.351453E-02
G 1.315690E-19 6.021160E-01 0.0 0.0 G 1.394798E+19 3.54737E-01 0.0 0.0 G 1.475277E-19 3.511644L-02 0.0 0.0 G 1.541659E-19 -3.71644L-02 0.0 0.0 G 1.543658E-19 -6.27547E-01 0.0 0.0 G 1.645560E-19 -6.4727451E-01 0.0 0.0 G 1.708541E-19 -8.362660E-02 0.0 0.0 G 1.724909E-19 4.326236E-01 0.0 0.0 G 1.730243E-19 1.000000E+00 0.0 0.0	-1	U	1.223470E-19	31.0348	0.0		0.0	2.412442E-03
G 1.394793E-19 3.545737F-01 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	12	IJ	1.315690E-19	3001130	0.0		0.0	-3.911161E-02
G 1.475277E-19 -2.311644E-02 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	13	IJ	1.394743E-19	5-5737F	0.0		0.0	-6.8R8540£-02
G 1.541659E+19 -3.818428E+01 6.0 0.0 G 1.598537E+19 -6.278872E+01 0.0 0.0 G 1.645560E+19 -6.4784581E+01 0.0 0.0 G 1.68537E+19 -8.727451E+01 0.0 0.0 G 1.724909E+19 -8.3262660E+02 0.0 0.0 G 1.730243E+19 1.000000E+00 0.0 0.0	14	ŋ	1.475277E-19	311684	0.0		0.0	-7.806863E-02
G 1.594537E-19 -6.27557E-01 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	15	O	1.5416596-19	35514.6	0.0		0.0	-6.3691225-02
G 1.645560E-19 -6.543634E-01 0.0 0.0 0.0 0.0 1. 682437E-19 -4.727451E-01 0.0 0.0 0.0 0.0 5. 0.0 0.0 0.0 0.0 0.0	16	IJ	1.598537E-19	3510812	0.0		0.0	-2.9432865-02
G 1.682437E-19 -4.727451E-01 0.0 0.0 0.0 5.0 5.0 5.0 0.0 0.0 0.0 0.0	17	IJ	1.645560E-19	343803E	0.0		0.0	1.561108E-02
G 1.708541E-19 -8.362660E-C2 0.0 0.0 0.0 9.314320 G 1.724909E-19 4.326236E-C1 0.0 0.0 0.0 0.0 1.104565 G 1.730243E-19 1.000000E+00 0.0 0.0 0.0 0.0 1.149382	18	c	1.682437E-19	7274518	0.0		0.0	5.9865746-02
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NASTRAN COURSE - - - DEMO. PROB. 3 NORMAL MODES ANALYSIS

INVERSE POWER METHOD EIGENVALUE = 3.893342E+05

11 5.636531E-16 1.992146E-01 1.123831E-15 5.602358E-01 1.677080E-15 6.973187E-01 2.749210E-15 3.126544E-01 3.753644E-15 -2.045347E-01 4.2226649E-15 -2.045347E-01 5.079869E-15 -2.045347E-01 5.079869E-15 -2.87332E-01 5.462760E-15 -2.87332E-01 5.462760E-15 -2.87332E-01 6.42336E-15 7.744223E-01 6.637156E-15 6.555482E-01 6.637156E-15 6.555482E-01 6.637156E-15 6.600463E-01 6.832394E-15 6.600463E-01 6.832394E-15 6.600463E-01 6.832394E-15 6.600463E-01 6.95558E-15 -2.260455E-01 7.095555E-15 -2.03226E-01				
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NASTRAN COURSE - - - DEMO. PROB. 3A NORMAL MODES ANALYSIS

GIVENS METHOD

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FEBRUARY 10, 1981 NASTRAN 12/15/80

TITLE=NASTRAN COURSE - - - DEMO. PROB. 3A SUBTITLE=NORMAL MODES ANALYSIS LABEL=GIVENS METHOD SPC= 11 METHOD ASTOCA 2 DISP=AL BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

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GIVENS METHOD

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NASTRAN COURSE - - - NORMAL MODES ANALYSIS

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NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

34 STARTING WITH ID *** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

20) 0 S AVG 0 PREFACE LOOPS ***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KOD (N = 1 PC AVG = 0 SPILL GROUPS = 1 PC AVG = 0 SPILL GROUPS = 2 PCMAX = 2 PCMAX = 0 PC GROUPS = METHOD 1 T, NBR PASSES = 1,EST. TIME = .1 PYAD--NULL MATRIX PRODUCT MPYAD--NULL MATRIX PRODUCT MPYAD--NULL MATRIX PRODUCT

40) 0 S AVG 0 PREFACE LOOPS 248 *** USER INFORMATION MESSAGE 2016, GIVENS TIME ESTIMATE IS 3 SECONDS.
PROBLEM SIZE IS 40, SPILL WILL OCCUR FOR THIS CORE AT A PROBLEM SIZE OF **•USER INFORMATION MESSAGE 3023—PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK MAA (N = 1 DC AVG = 0 SPLL GROUPS = 1 DC AVG = 0 SPLL GROUPS = 1 DC AVG = 0 SPLL GROUPS = 1 DC AVG = 0 DC GROUPS = 1 DC AVG = 1 ST. TIME = 1 DC AVG = 1 DC A

NASTRAN COURSE - - DEMO. PROB. 3A NORMAL MODES ANALYSIS

FEBRUARY 10, 1981 NASTRAN 12/15/80

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GIVENS METHOD

EIGENVALUE ANALYSIS SUMMARY (GIVENSMETHOD)

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NOYBER OF EIGENVALUES EXTRACTED	NUMBER OF EIGENVECTORS COMPUTED	NUMBER OF EIGENVALUE CONVERGENCE FAILURES .	NUMBER OF EIGENVECTOR CONVERGENCE FAILURES.	REASON FOR TERWINATION	LARGEST DFF-DIAGONAL MODAL MASS TERM.	MODE PAIR		NUMBER OF OFF-DIASONAL MODAL MASS TERMS FAILING CRITERION

NASTRAN COURSE - - - DEMO, PROS. 3A NORMAL MODES ANALYSIS GIVENS METHOD

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	GENERALIZED STIFFNESS	2. 2. 2. 8 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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NASTRAN 12/15/80		R3	0.0	1.695253E-03	3.2717645-03	•	6.0514535-03	.276	8.3740575-03	9.354948E-03	1.022193E-02	1.097817E-02	1.1627625-02	1.2175096-02	1.262625E-02	1.2987755-02	1,3267:85-02	1.347313E-02	1.361525E-02	1.370417E-02	1.375163E-02	1.3770375-02	1.377422E-02
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34	ж А г	12	0.0	4.2929285-03	1.6765346-02	.9-1375E-0	6.3-35-35-02	0	- 1	1.8078418-01	2.2977518-01	x.	(*)	4		5.2004845-01	5.907198E-01	6.575002E-01	7.2534665-01	. 93	8.623205E-01	9.311352E-01	1,000000E+00
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NASTRAN COURSE - - - DEMO. PROB. 3A NORWAL WODES ANALYSIS

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POINT ID.	TYPE	1	12	13	άx	R2	R3
	G	0.0	0.0	0.0	٠	0.0	0.0
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	IJ	0.0	-3.955740E-01	0.0		0.0	-5.681198E-02
	ß	0.0	-6.4488135-01	0.0		0.0	-4.108937E-02
	IJ	0.0	-7.742163E-01	0.0	•	0.0	-6.8395905-03
	ני	0.0	-7.078437E-01	0.0	•	0.0	3.3187645-02
	O	0.0	-4.545864E-01	0.0	•	0.0	6.5714365-02
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	ی	0.0	7.2852206-01	0.0		0.0	2.410000E-03
	U	0.0	6.3212035-01	0.0		0.0	-3.911452F-02
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COMPUTE AND PRINT NORMALIZED MODAL MASS MATRIX.

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NASTRAN 12/15/80 FEBRUARY 10, 1981

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NASTRAN COURSE - - - DEMO. PROB. 38 NORMAL MODES ANALYSIS

FEER TRIDIAGOVAL REDUCTION METHOD

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TITLE=NASTRAN COURSE - - - DEMO. PROB. 3B SCRITTLE=NORMAL VODES ANALYSIS
LAREL=FEER TRIDIAGONAL REDUCTION METHOD LINES=51
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*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-DRDER DECK.

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NASTRAN COURSE +	NORMAL MODES ANALYSIS

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DEMO. PROB. NASTRAN COURSE - - - NORMAL MODES ANALYSIS

NASTRAN 12/15/80

FEBRUARY 10, 1981

FEER TRIDIAGONAL REPUCTION METHOD

*** USER POTENTIALLY FATAL MESSAGE 22,
POSSIBLE ERROR IN DWAP INSTRUCTION ADD
DATA BLOCK NAMED A APPEARS AS INPUT BEFORE BEING DEFINED

103

INSTRUCTION NO.

103

INSTRUCTION NO. *** USER POTENTIALLY FATAL MESSAGE 22,
POSSIBLE ERROR IN DWAP INSTRUCTION ACD
DATA BLOCK NAMED 8 APPEARS AS INPUT BEFORE BEING DEFINED

ERRORS FOUND - EXECUTE NASTRAN PROGRAM.*

34 STARTING WITH ID SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

SYSTEM WARNING MESSAGE 3022

CURRENT DMAP IS REQUIRED AS INPUT AND IS NOT GUTPUT BY A PREVIOUS MODULE IN THE DATA BLOCK A

SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP 00 DATA BLOCK

SYSTEW WARNING MESSACE 3022

A PREVIOUS MODULE IN THE CURRENT DMAP IS REQUIRED AS INPUT AND IS NOT DUTPUT BY DATA BLDCK A

SYSTEM WARNING MESSAGE 3022

18 REQUIRED AS INPUT AND IS NOT DUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP DATA BLOCK

*** SYSTEM WARNING MESSAGE 3022

ROUTE. IS REQUIRED AS INPUT AND IS NOT QUIPUT BY A PREVICUS MODULE IN THE CURRENT DMAP DATA BLOCK A

*** SYSTEM WARNING MESSAGE 3022

IS REGUIRED AS INPUT AND IS NOT GUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. œ

60) 0 S AVG 0 PREFACE LOOPS ***USER INFORMATICN WESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAWA (N = TIME ESTIMATE= 1 C AVG = 4 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE= -26297 C MAX = 5 PCMAX = 0 PC GROUPS =

USER WARNING MESSAGE 2399 ONLY THE FIRST O EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (FI OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS.

USER WARNING MESSAGE 2399 ONLY THE FIRST O EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS. 152

USER WARNING MESSAGE 2399 Only the first of eigensolutions closest to the shift point ("1 or zero) pass the feer accuracy test for eigenvectors.

USER MARNING MESSAGE 2799 DNLY THE FIRST — O EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERG) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS. ONLY THE FIRST

SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS. TO THE USER WARNING MESSAGE 2399 ONLY THE FIRST O EIGENSOLUTIONS CLOSEST

USER WARNING MESSAGE 2399 Only the first of eigensolutions closest to the shift point (F1 or zero) pass the feer accuracy test for eigenvectors.

TO THE SHIFT POINT (FI OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS. USER WARNING MESSAGE 2399 ONLY THE FIRST O EIGENSOLUTIONS CLOSEST USER WARNING MESSAGE 2399 ONLY THE FIRST O EIGENSOLUTIONS CLOSEST TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS.

TO THE SHIFT POINT (F1 OR ZERO) PASS THE FEER ACCURACY TEST FOR EIGENVECTORS. USER MARNING MESSAGE 2399 ONLY THE FIRST O EIGENSOLUTIONS CLOSEST

USER WARNING MESSAGE 2399 Only the first — 9 eigensolutions closest to the shift point (f1 or zero) pass the feer accuracy test for eigenvectors.

*** USER INFORMATION MESSAGE 2392

3 MORE ACCURATE EIGENSOLUTIONS THAN THE 3 REQUESTED HAVE BEEN FOUND. USE DIAG 16 TO DETERMINE ERROR BOUNDS METHOD 1 NT, NBR PASSES = 1, EST. TIME = METHOD 3 T , NBR PASSES = 1, EST. TIME = .

*** USER WARNING MESSAGE 3034

ORTHOGANALITY CHECK FAILED. LARGEST TERM = 3.6968510E-01, EPSILON = 1.0000000E-04

METHOD 1 NT.NBR PASSES = 1.EST. TIME = .0 METHOD 1 NT.NBR PASSES = 1.EST. TIME = .0

NASTRAN COURSE - - - DEMO, PROB, 38 NORVAL MODES ANALYSIS

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FEER TRIDIAGONAL REDUCTION METHOD

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FEBRUARY 10, 1981 NASTRAN 12/15/80

NASTRAN COURSE - - - DEMO: PROB: 39 NORMAL MODES ANALYSIS

FEER TRIDIAGONAL RENUCTION METHOD

(FEER METHOD) SUMMARY ANALYSIS BIGENEALUE

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NASTRAN COURTE - - - DEMO. PROB. 38 NORMAL WODES ANALYSIS

FEER TRIDIAGONAL REDUCTION METHOD

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CYCLIC FREQ (ENCY	1,76751,6+00 1,10442,6+01 3,0839,22,+01 6,0257,02,+01 4,9307,36E,01 1,478693E,02
RADIAN FREQUENCY	1,1105.48.01 6.39.30.87.18.02 7.94.77.78.02 3.794.03E+02 6.239665E+02 9.290901E+02
EIGENVALUE	1.233355E+02 4.8+5432E+03 3.754747E+04 1.433453E+05 3.893342E+05 8.632084E+05
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RESTART OF DEVO. PROB. 3 TO OBTAIN NORE HODES (APPEND FEATURE) NASTRAN COURSE - - - DEMO. PROB. 30 NORTAL VOCES ANALYSIS - - - INVERSE POWER VETHOD

TITLE=NASTRAN COURSE - - - DEMO, PROB, 3C SUBTITLE=NORTAL TODES ANALYSIS - - - INVERSE POWER METHOD LABEL=RESTART OF DETO, PROB, 3 TO OBTAIN NORE MODES (APPEND FEATURE) SPC= 11 SPC= 11 METHOD=41 DISP= ALL BEGIN BULK

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NASTRAN COURSE — — — DEMO, PROS. 30 Normal Wodes analysis — — — Inverse pomer method

RESTART OF DEMO. PRDB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)

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NASTRAN COURSE - - - DEMO, PROS. 30 NORMAL MODES ANALYSIS - - - INVERSE POWER METHOD

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FEBRUARY 9, 1981 NASTRAN 12/15/80

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RE MODES			31																		7.8.1	* * * * * * * * * * * * * * * * * * *	r																			+ > 0	25 0.	0.75 126
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. 3 10 08			BAROR	3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	έα 1 -1 1 :: 1 ::	r & r +r n =n u u	() () () () () () () () () ()	CB4R	CBAR	CBAR	α (α (α (α (α (α (α (α (X (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	1 Y 1 • 1 2 0 2 ()	r n 1 4 1 0 0 0 0 0 0	348 0 0 48	C440	ر د د د د د د د د د د د د د د د د د د د	A TOTO	a :	07 0 41 1 10 1-	#1.0% +8168 4	±350a5	50.5	() ()	Cr agr	.) (?:: :) (, ,	0.80	C (0)) () () () () () () ()	() () ()	GP:10	01 a.s	ე ი გ გ ე ი		0.80	0:	0130	- 00 - 41 - 41 - 01	+ 531	8 P C 1
F JETT. PROB	•	0000 14000	1	- Z	J -1	r wo	9-	7 -	.	-6	+0-	1 - (1 7 - •	۱ . ۱ .	- -	-0-	- 21	10	±ë.†	- 50 - 50 - 50	2 C C	2.2.2	24-	25-	255-	27.7	1 15 CH C	2 to 2) (32-	- - - - - - - - - - - - - - - - - - -	: 	ا ن ز ن ا	37-	3.4-	ლე. + იი	4 4 0 4 1 1	124	1.5	4	1 1 1	1 0 4 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4.80	4 0 0 - 0 0

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RESTART OF DEVO. PROB. 3 TO OBTAIN MORE HODES LAPPEND FEATURE)

LIST OF MODIFIED CARDS

MASA AGRO - BIT POSITION - CARD NAME - PACAED BIT POSITION

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POUTS NOTOOPS

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FEBRUARY 9, 1981 NASTRAN 12/15/80 PAGE

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NOTES AND AND PROBLEM OF POAER METHOD NATIONS TO BE AND AND MERCINES (APPENDINGE)

SORTED BULK DATA ECHO

5 6 8 : 9 ഗ 4 . : 8 CARD

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RESTART OF DEVO. PROB. 3 TO OBTAIN MORE MODES (APPEND FEATURE)
LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

DEMO. PROS. 3C --- INVERSE PONER DETHOD

NASTRAN COURSE - - - NORWAL MODES ANALYSIS

*INDICATES INSTRUCTIONS TO BE EXECUTED FOR MODIFIED RESTART

THE FOLLOWING FILES WERE USED FROM OLD PROBLEM TAPE TO INITIATE RESTART

FILE NO.	u	o 1~ 00	010	- a a	24 30 34	ଅଟି ଓଡ଼ ଅନ୍ତର ଅନ୍ତର	4 4 4 4 5 2 5 2 5 2 5 5 5 5 5 5 5 5 5 5
REEL V.D.							
FILE NAME	54 ம். ய ய	100) ⊢ (/\	0.10(0	7 10 W	0 4 6 4 0 4 6 4 4 4 5 5	$\alpha I >$

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

NASTRAN COURSE = - - DEMO. PROB. 30 NORMAL WODES ANALYSIS = - - INVERSE POWER METHOD RESTART OF DEVO. PROB. 3 TO CBIAIN NORE VODES (APPEND FEATURE)

* SYSTEM WARNING VESSACE 3022

IS REQUIRED AS INPUT AND IS NOT BUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK BURDP

** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT CUIPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK SIP

*** USER INFORMATION WESSAGE 3143, THE EIGENVALUES AND FIGEN, ECTORS FOUND ON THIS RESTART WILL BE APPENDED

TO THE A ELGENVALUES AND ELGENVECTORS PREVIOUSLY CHECKPOINTED,

60) 0 S AVG 0 PREFACE LOOPS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAWA (N = C AVG = 0 SPILL GROUPS = C MAX = 5 POWAX = 0 PC GROUPS = ***USER INFORMATION VESSAGE 3023--PARAMETERS TIME ESTIVATE= 1 AUDITIONAL CORE= +23722

60) S AVG = O PREFACE LOGPS = FOR SKRYETRIC SECOMPOSITION OF DATA BLOCK LAWA (N = C A.S = 6 SPILL GROUPS = C VAX = 5 PCMAX = 0 PC GROUPS = METHOD 1 NI,NBR PASSES = 1.EST. TIME = .1 ***USER INFORMATION VESSAGE 3023--PARAMETERS
**IME ESTIMATE= 1
ADDITIONAL CORE= -23722

NASTRAN COURSE --- DEMO. PROB. 3C NORMAL MODES ANALYSIS --- INVERSE POWER METHOD

RESTART OF DEMO. PROB. 3 TO OBTAIN MCRE WODES (APPEND FEATURE)

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EIGENVALUE ANALYSIS SIMMADS

(INVERSE POWER METHOD)
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NUMBER OF ELGENVALUES EXTRACTED	NUTBER OF STARTING POINTS USED	NUMBER OF STARTING PCINT MOVES	ш	TOTAL NUMBER OF VECTOR ITERATIONS	REASON FOR TERMINATICN	LARGEST OFF-DIAGONAL MODAL MASS TERM	MODE PAIR		NOMBER OF OFF-DIAGONAL MODAL MASS TERMS FAILING CRITERION

RESTART OF DEVICE. PROB. 3 TO OBTAIN MORE MODES LAPPEND FEATURE)

NASTRIN COURSE - - - DEMO, PROB. 30 NORMAL WODES ANALYSIS - - - INVERSE POWER VETHOD

EIGENVALUES R E A L

		: :		
EIGENVALUE	RADIAN FREJULACY	CYCLIC FREQUENCY	GENERALIZED WASS	CENERALIZED STIFFNESS
1.233355E+02	1,110535E+01	1.7675196+00	7 2000 2000 2000 2000 2000 2000 2000 20	A 943017E-01
4,815432E+03	6.9393315+01	1.1043246+01	A: 0100000000000000000000000000000000000	0.044000000
3.754747E+04	1.937717E+02	3 OBSOLUTION	0.000 - 1.00 0.000 - 1.00 0.000 - 1.000	0+1244247.2
1.433458E+05	3,7861035+02	G 005770E+01	0.000044F103	Z.180999E+0Z
3.893342E+05	6.2396bsF+02	0:020770T+01	0.3847738103	8.583220E+02
8.6320846+05	9 2969316 #02	- 010000000	0.2402.000	50491000017 1001010101
•	70.000	Z0+300007+	0.0184/25-03	5.713120E+03

METHOD 1 T , NBR PASSES = 1, EST, TIME =

FEATURE)
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SECT
NORE
. 3 TO DBIAIN NORE #30ES
10
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pela.
OF DEVO.
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RESTART

RESTARY OF DEVO. P	DEVO. PR	919 3 TO OBTAIN NORE	NORE WOOFS (APPEND	END FEATURE)			
EISENVALUE		55E+02	7 7		z «	-	
POINT 10.	TYPE	1	12	ღ_	ά	82	en en
	g	0.0	0.0		0.0	0.0	0.0
5	O	-1.380769E-21	4.292372E-03	0.0		0.0	1.696038E-03
က	ڻ و	ų,	1,4763545-02	o.o	0.0	0.0	3.271528E-03
4	g	-4. 'CH308E-21	3.6-21100E-02	0.0	•	0.0	4.726585E-03
5	()	25.8E-	6.5733278-02	0.0	٠	0.0	6.0515405-03
မ	G	134680E-	9.7734428-02	0.0		0.0	7.2770745-03
7	(ر.	-7.9200001-21	1.3-41108-01	ر. د	•	0.0	8.3743615-03
89	O	l iii	1.8078445-0:	0.0	•	0.0	9.3551888-03
6	g	-1.034417E-20	2.2477678-01	0.0	0.0	0.0	1.022204E-02
10	J	-1.142934E-20	2.8782458-01	0.0	•	0.0	1.097816E-02
-	IJ	CA	3.3.38406-01	0.0	•	0.0	1.1627565-02
12	IJ	-1.338202E-20		0.0	•	0.0	1.2175075-02
13	و	3	10-8555500-4	0.0	•	0.0	1.2026356-02
4	ڻ و	0520E-2		0.0	•	0.0	1.2987388-02
÷.	O	Ш	5.907233c-01	0.0	•	0.0	1.326747E-02
16	O	05-2		0.0	٠	0.0	1.3473376-02
-1	O	73716E-2		0.0	٠	0.0	1.361532E-02
±	ၒ	E-2	7.936716E-01	0.0	•	0.0	1.370403E-02
91	ن	E-2	8.623251E-01	0.0	•	0.0	1.375128E-02
20	IJ	-1.754424E-20	9.3113785-01	0.0	0.0	0.0	1.3769906-02
21	Ø	-1.759849E-20	1.000000E+00	0.0	0.0	0.0	1.377372E-02

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NASTRAN COURSE NORVAL YODES ANALYS	RSE S AMALYSI	- DEMO, PROB. 3C IS INVERSE	BO RSE POWER WETHOD	0	FEBRUARY	9, 1981	NASTRAN 12/15/80
RESTART OF	DENG. P	POB. 3 TO OBTAIN	MORE TODES (APPEND	END FEATURE)			
100000000000000000000000000000000000000	r ·	F T	R E A L E I C	GENVECTO	Ο z	8	
POINT ID.	1 Y P.E	1	12	13	ά	R2	83
	g	0.0	0.0	0.0	0.0	0.0	0.0
2	()	1.812109E-21	-2.541131E-C2	o.0	0.0	0.0	-9.7083445-03
m	₍)	3.6130455-21	-9.2 -01235-02	0.0	0.0	0.0	-1.6794095-02
4	O	5.3917056-21	10-8040144-41	0.0	0.0	0.0	-2,129275E-02
S	g	7.137122E-21	-3.0164248-01	0.0	0.0	0.0	-2.3289075-02
9	_O	8.83×535E+21	14.1817387-01	0.0	0.0	0.0	-2.2930636-02
7	ပ		-5.2745736-01	0.0	0.0	0.0	-2.0433955-02
60	IJ	1.206773E-20	-6.10.10078-01	0.0	0.0	0.0	-1.6083635-02
6	O		-6.5543125-01	0.0	0.0	0.0	-1.022J90E-02
10	()	1.49.9765-20	-7.3:11446-01	0.0	0.0	0.0	-3.2506455-03
-	Ø		-7.4723788-51	0.0	0.0	0.0	4.4158.75-03
12	IJ	1.758245E-20	-6.755321E-01	0.0	0.0	0.0	1.2342085-02
13	g		-5.9404726-61	0.0	0.0	0.0	2.0109315-62
14	IJ		-4.751258E-01	0.0	0.0	0.0	2.733465E-02
15	IJ	.057880E-2	-3.2210976-01	0.0	0.0	0.0	3.359732E-02
46	ŋ	.133803E-2	3495330	0.0	0.0	0.0	3.6457138-02
1.7	O	.196571E-2	6.5433775-02	0.0	0.0	0.0	4.2975015-02
± 9	U	2.245796E-20	.8773218	0.0	0.0	0.0	4.5728445-02
91	ť	.281175E-2	.2082698	0.0	0.0	0.0	4.7323616-02
20	g		'n	0.0	0.0	0.0	4.8003795-02
21	IJ	2.309610E-20	1.00000CE+CO	0.0	0.0	0.0	4.815432E-02

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NASTRAN COURSE - - - DENO, PROB. 30 NORMAL WODES ANALYSIS - - - INJERSE PONER VETHIO

	e	α
	O z	£
PEND FEATURE)	REAL ETGENVECTOR NO.	13
RESTART OF DEMO. PROB. 3 TO OBTAIN MORE TODES (APPEND FEATURE) Fidenmance - 3 7547475-04	 .r. .u. .u.	C E
. 3 TO OBTAIN		11
RESTART OF DEMO. PROB. 3 TO FIGENATURE - 3 7547476-04		POINT ID. TYPE
RESTART		FNICE

R.3	0.0	2.4971135-02	3.7457745-02	3.905870E-02	3.162030E-02	1.6282185-02	-3.2018965-03	-2.331.846-02	-4.00504E-02	-5.217508E-02	-5.604850E-02	-5.143885E-02	-3.6854525-02	-1. 997258E+02	2.6402275-03	2.5962405-02	4,7038428-02	6.3512746-02	7,4115295-02	7.9045155-02	8.021846E-02
R2	0.0									0.0											0.0
æ	•	•	•	•	•	•	٠			0.0	•	•		•	•		•	•	•	٠	•
13										0.0											0.0
27	0.0	B. 7. 930 'E-02	2.3.142.45-01	133673101	6.16-27.36-01	-311600	7. 4 (1955-01	7.0000 08-01		8.01 0.08	1-	.433306E-	1.184	-30208.81	-31816-4	-8.0-140H8-01	-3842H-31	-1.31058 E-01	2.1598225-01	6.0032355-01	1.000000E+00
	٥,٥	-2.841736E-21	-5.6659516-21	-8.455233E-21	-1.119258E-20	-1.36 -0535-20	-1.6443226-20	-1.4.2:20	-2.12%,4158-20	-2.352752E-20	-2.5810878-20	-2.754131E-20	-2.930196E-20	-3.0981~4E-20	-3.2271536-20	13.3402188120	E L	-3.5218425-20	-3.577323E-20	-3.610749E-20	-3.621914E-20
+ 4 7 E	()	Ö	O	ø	<u>ပ</u>	IJ	ij	O	()	IJ	rg	O	ij	g	()	ניז	ø	IJ	IJ	၁	G
INT ID.	-	(4	'n	4	5	ဖ	1~	ъ	6	0	-	4	13	4	u) ₩	,	17	<u>.</u> მ	19	20	21

Approximation of the second of

NASTRAN COURSE - - DEMO. PROB. 3C NORMAL MODES ANALYSIS - - - INVERSE FOMER WETHOD

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NASTRAN 12/15/80

9, 1981

FEBRUARY

RESTART OF DEMO. PROB. 3 TO OBTAIN MORE HODES (APPEND FEATURE) EIGENVALUE = 1.433458E+05

. O Z EIGENVECTOR 3 E E

R3	0.0	-4,4F6526E-02	-5.6809022-02	-4.1087985-02	-6,8406348-03	3.3164495-02	6.5710355-02	8.0222905-02	7.2232785-02	4.3514535-02	2.4124425-03	-3.911161E-02	-6.888540E-02	-7.806683E-02	-6.3091225-02	-2.943286E-02	1.501108E-02	5.986574E-02	9.314320E-C2	1.104585E-01	1.1493825-01
R2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	٥.٥	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
T3			0.0		0.0	0.0	٥.٥	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
۲ .	0.0	-1,242547E-01	-3.9355118-01	-8.489489E-01	+7.741809E-01	-7.078.915-01	-4.835-5-C1	-7.9-64706-02	3.1:57908-01	6.0%8128-01	7.2. 5334E-01	6.3211848-01	3.5457378-01	-2.311684E-02	-3.875424E-01	-6.275872E-01	-6.843603E-01	-4.727451E-01	-8.352660E-02	4.3262305-01	1.000000E+00
1.1	0.0	1.357540E-20	2.706710E-20	4,0391925-20	5.5467705-20	6.621352E-20	7.8551716-20	9.040523E-20	1.017015E-19	1.123706E-19	1.2234706-19	1.3156905-19	1.5507935-19	1.470277E-19	1.541659E-19	1.598537E-19	1,645560E-19	1.682437E-19	1.708941E-19	1.724909E-19	1.730243E-19
TYPE	ij	IJ	g	ပ	ıσ	IJ	IJ	IJ	IJ	_ت	IJ	ن	ß	()	(J	ڻ	ပ	IJ	IJ	O	IJ
POINT ID.	-	5	က	4	5	ŧΩ	7	30	6	0-		12	13	4	15	91	17	18	61	20	21

NASTRAN COURSE DEMO. PROB. 30	FEBRUARY	9, 1981	FEBRUARY 9, 1981 NASTRAN 12/15/80
NORDAL TODES ANALYSIS INVERSE POWER DETHOD			
RESTART OF DEMO. PROB. 3 10 OBTAIN MORE MODES LAPHEND FEATURE)			
E108,VALUE = 3.8933428+05			

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POINT ID.		11	12	13	ā	R2	R3
	IJ	0.0	0.0		0.0		0.0
2		5.834531E-16	1,000	0.0	0.0	0.0	6.7090185-02
e		1.123531E-15	5.1.003 8.01	ر. د	0.0	0.0	6.6404115-02
す		3.6770s0E-18		O. O	0.0	0.0	1.0421575-02
ın		2.2300000000	6. 3731875-01	0.0	0.0	0.0	-5.0178158-02
Ð		2,73 -210E-15	3.1.7.54 (8-01	0.0	0.0	0.0	-9.738C30E-02
7		3.261482E-15	-2.048-475-01	0.0	0.0	0.0	-1.00609985-01
œ		3.75,38448-15	-6.1735246-01	0.0	0.0	0.0	-5,7239346-02
σ		4.22224E-15	-7.3000004	0.,	0.0	0.0	1,2725725-02
10		4,500 0.98-15	15.0.33777-01	0.0	0.0	0.0	7.5414008-02
		5.67 0.00-15	G;	0.0	0.0	0,0	1.0379551-01
12		5, 44000 OE+18	4.27 - 12.38-01	၀. ၁	0,0	0.0	8.1495525+02
13		5.8:19005-15	10-3-4-3-11	0.0	0.0	0.0	2.1442246-02
1.4		6.125376E-15	6.5 53425-01	0.0	0.0	0.0	-4,902427E-02
15		6.400994E-15	Ċ,	0.0	0.0	0.0	-9.574126E-02
16		6.637156E-15	-2.2 C.5 E - 01	0.0	0.0	0.0	-9.6027855-02
17		6.8323945-15	-6.0/04638-01	0.0	0.0	0.0	-4.8661565-02
÷ 0		6.985508E-15	-6.6791206-01	0.0	0.0	0.0	2.6110485-02
6-		7.095555E-15	-3.50310:5-01	0.0	٥.٥	0.0	9.728805E-02
20		7.161855E-15	2.5.5225E-01	0.0	0.0	0.0	1.400819E-01
•		0 + 1 0 0 0 0 0 0 0 0		(•	•	

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ABSTART OF THE	05:00.00:30	8. 3 10 OBTAIN	NORE TODES LAPPEND	NO FEATURE)			
2		; ;	о 1 3 тезы	S E N V E C T O R	0 z	·Q	
.0: FN109	⊒	÷-	F- C4	2	ā	82	R3
-	c	٠.٥	· ·	0.0		0.0	٥.٥
2	()	-5.0721195-17	-2.000000000000000000000000000000000000	0.0	0.0	0.0	-9.051773E-02
e	O	1300001	11.2	0.3	•	0.0	-6.0465405-02
प	c)	-1.6570108-16	0.110	0.0	•	0.0	3.5325728-02
ഗ	U	-2.2340055-16	-3.7	0.0		0.0	1,1745485-01
10	(3	3013 31.	20.013.00.00	0.0		0.0	1,2273346-01
7	O	.2000-20	7.150 4.15-01	0.0		0.0	4.4977855-62
30	(3	-3.777.049E-10	0.000	0.0		0.0	-6.0093175-02
úυ	ιĵ	-23 6 +2T-	10-31-11-34-34-1	0.0		0.0	-1.2718455-01
0.	O	B7:1259.	1010100000011	0.0	•	o. o	-1.0313465-01
-	Ø	.1111-658	-7.40 (25- E-01	0.0	•	0.0	-7.6716685-03
12	ن	-5.497276E-16	-5.3164646-01	0.0		0.0	9,3153315-02
£.	O	8437648.	6.5+01126-02	0.0		0.0	1.2460695-01
-	U	.164073E-	6.1-2-208-01	0.0		0.0	525
51	Ø	4414098-	7.48.4808-01	0.0		0.0	-2.9133425-02
G	()	67.5091E-	3.4*11448-01	0.0	•	0.0	-1,1387565-01
¢-	()	-8.875564£-16	10-5:1016:0:0-	0.0		0.0	-1,1799745-01
3	J	0255476-	703.1335	0.0	•	0.0	-3.6150465-02
6	IJ	140390E-	(i) (i)	0.0	•	0.0	8.092702E-02
20	O	.207110E-	7.8-83375-02	0.0		0.0	1.660973E-01
	IJ	-7.229396E-16	1.000000E+00	0.0	0.0	0.0	1.930724E-01

· · END OF JOB · ·

LEVEL 17.5.1 NA ANTON STORES AN GARLON FORMA AN ENGLISH MAN HAM NEWAYA NATATA MANN MENTA NATATA MESSESSION AMNOM RAPES VR MAN MALERINAL

MEAN OF THE PROPERTY OF THE PR #12421 -- 120 C. C. C.

SYSTEM GENERATION DATE

RIGID FORMAT SERIES P

CDC 6000 SERIES 6400 / 6500

DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/8 9/2
NASTRAN SAMPLE PROBLEM COMPUTER OUTPUT, (U)
FEB 81 6 C EVERSTINE, M M HURWITZ
DTNSRDC/CMLD-81-04 AD-A096 867 UNCLASSIFIED 40 4096+67

NASTRAN EXECUTIVE CONTROL DECK ECHO

ID NASTRAN, DEMO APP DISP TIME 10 SOL 4.0 CEND N

NASTRAN COURSE - - - DEMO. PROB. 4 STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS

5/8-INCH DIAMETER STEEL BEAM

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TITLE=NASTRAN COURSE --- DEMO. PROB. 4
SUBTITLE =STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS
LABEL= 5/8-INCH DIAMETER STEEL BEAM
SPC= 11
CLOAD = 29
CLOAD = 42
DISP-ALL
DISP-ALL
SET 18= 1 THRU 20 2646678651111111

SUBCASE 1

LABEL = LINEAR STATIC SOLUTION

ELFORCE = 18

SUBCASE 2

LABEL=STATIC DIFFERENTIAL STIFFNESS (BEAM-COLUMN) SOLUTION

\$ DSCOEF=DEFAULT (REQUIRED FOR LEVE. 16, BUT NOT FOR LEVEL 17)

BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

PAGE

NASTRAN COURSE - - - DEMO. PROB. 4 STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS

5/8-INCH DIAMETEP STEEL BEAM

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DECEMBER 27, 1979 NASTRAN 8/15/79

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5/8-INCH DIAMETER STEEL BEAM

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NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

34 STARTING WITH ID	12 STARTING WITH ID
*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE	*** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

52

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*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK PLIPAR

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK GPSETS

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT S! A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK ELSETS

*** SYSTEM WARNING MESSAGE 3022

15 REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK PLTPAR

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT QUIPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK GPSETS

*** SYSTEM WARNING MESSAGE 3022

15 REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK ELSETS

60) 0 S AVG 0 PREFACE LOOPS ***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KAA (N = TIME ESTIMATE= 1 C AVG = 4 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE= -28488 C MAX = 5 PCMAX = 0 PC GROUPS =

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT GUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE DATA BLOCK PLTPAR

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT DUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK GPSETS

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT GUTPUT BY A PREVIGUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK ELSETS

MPYAO--NULL MATRIX PRODUCT
METHOD 1 NI, NBR PASSES = 1, EST. TIME

*** USER INFORMATION MESSAGE 3035

FOR LOAD 1 EPSILON SUB E = -3.0623393E-10

PAGE

SUBCASE 1

LINEAR STATIC SOLUTION

R2 R3	0.0	0.0 2.439828E-04	0.0 5.151233E-04	0.0 8.134216E-04	0.0 1.138878E-03	0.0 1.491492E-03	0.0 1.871263E-03	0.0 2.278193E-03	0.0 2.712280E-03	0.0 3.173525E-03		0.0 4.177489E-03	0.0 4.720207E-03	0.0 5.276504E-03	0.0 5.832801E-03	0.0 6.389099E-03	0.0 6.945396E-03	0.0 7.501693E-03	0.0 8.057991E-03	0.0 8.614288E-03	0.0 9.170585E-03
<u>R</u>	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	0.0	5.981815E-04	2.484171E-03	5.793758E-03	1.0F6273E-02	1.722588E-02	2.562199E-02	3.538386E-02	4.844826E-02	6.315100E-02	8.022786E-02	9.981462E-02	1.2204716-01	1.470389E-01	1.748121E-01	2.053669E-01	2.387031E-01	2.748208E-01	3.137200E-01	3.554007E-01	3.9986296-01
=	0.0	-1.358105E-05	-2.716210E-05	-4.074316E-05	-5.432421E-05	-6.790526E-05	-8.148631E-05	-9.506736E-05	-1.086484E-04	-1.222295E-04	-1.358105E-04	-1.493916E-04	-1.629726E-04	-1.765537E-04	-1.901347E-04	-2.037158E-04	-2.172968E-04	-2.308779E-04	-2.444589E-04	-2.580400E-04	-2.716210E-04
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ASTRAN COURSE .	ANALYSIS 1
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LINEAR STATIC SOLUTION

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SUBCASE 1

R3 2.500000E+01

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DECEMBER 27, 1979 NASTRAN 8/15/79

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SUBCASE 1

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ייס	PLANE 2	PLANE 1	PLANE 2	PLANE 1	PLANE 2	FORCE	TORQUE
0.0		1,157482E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.		1.279529E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.0		1,401576E+01	0.0	-2.440942E-01	0.0	-2.50000E+01	0.0
0.0		1.523623E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.0		1.645670E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.0		1.767717E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.0		1.889755E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.0		2.011812E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.0		2.13385~E+01	0.0	-2.440942E-01	0.0	-2.50000E+01	0.0
o. 0		2.255906E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.0		2.377953E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.0		2.500000E+01	0.0	-2.440942E-01	0.0	-2.500000E+01	0.0
0.0			0.0	-2.473826E-10	0.0	-2.500000E+01	0.0
0.0			0.0	-2.037268E-10	0.0	-2.500000E+01	<u>0</u> .0
0.0			0.0	-1.891749E-10	0.0	-2.500000E+01	0.0
0.0		2.500000E+01	0.0	-1.164153E-10	0.0	-2.500000E+01	0.0
0.0		2.500000E+01	0.0	-1.164153E-10	0.0	-2.500000E+01	0.0
0.0		2.500000E+01	0.0	-8.7311495-11	0.0	-2.500000E+01	0.0
0.		2.500000E+01	0.0	-5.820766E-11	0.0	-2.500000E+01	0.0
0.0		2.500000E+01	0.0	-8.731149E-11	0.0	-2.500000E+01	0.0

60) 0 S AVG • 0 PREFACE LOOPS • ***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KBLL (N = 1 TIME ESTIMATE = 1 C AVG = 4 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE = -28488 C MAX = 5 PCMAX = 0 PC GROUPS =

NASTRAN COURSE - - - DEMO. PROB. 4 STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS

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PAGE

DECEMBER 27, 1979 NASTRAN 8/15/79

5/8-INCH DIAMETER STEEL BEAM

8 L E **∀** ⊢ PARAMETER 0 CONTENTS

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NASTRAN COURSE - - - DEMO. PROS. 4 STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS

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DECEMBER 27, 1979 NASTRAN 8/15/79

5/8-INCH DIAMETER STEEL BEAM

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MPYAD--NULL MATRIX PRODUCT METHOD 1 NI,NBR PASSES = 1.EST. TIME =

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PROB. 4 DECEMBER 27, 1979

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NASTRAN 8/15/79

NASTRAN COURSE - - - DEMO. PROB. 4 STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS

5/8-INCH DIAMETER STEEL BEAM

*** USER INFORMATION MESSAGE 3035

FOR LOAD 1 EPSILON SUB E = -6.9758341E-10

VPYAD--NULL MATRIX PRODUCT VETHOD 1 T ,NBR PASSES = 1,EST. TIME = METHOD 1 NT,NBR PASSES = 1,EST, TIME = .2
METHOD 3 T,NBR PASSES = 1,EST, TIME = .0
METHOD 3 T,NBR PASSES = 1,EST, TIME = .0

*** USER INFORMATION MESSAGE 7019,

MODULE DSCHE IS EXITING FOR REASON 1 ON ITERATION NUMBER 1.

PARAMETER VALUES ARE AS FOLLOWS
DOVE = -1
SHIFT = 1
DSEPSI = 6.0721379E-14.

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK PLIPAR

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK GPSETS

*** SYSTEM WARNING MESSAGE 3022

DATA BLOCK ELSETS IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVICUS MODULE IN THE CURRENT DMAP ROUTE.

*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

NASTRAN COURSE --- DEMO. PROB. 4 STATIC ANALYSIS WITH DIFFERENTIAL STIFFNESS

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NASTRAN 8/15/79

DECEMBER 27, 1979

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STATIC DIFFERENTIAL STI	ERENT LAL	4	FNESS (BEAM-COLUMN) SOLUTION	z			SUBCASE 2
			DISPLA	ACEMENT	VECTOR		
POINT 10.	TYPE	E	12	13	R 1	R2	R 3
-	ø	0.0	0.0	0.0	0.0	0.0	0.0
7	IJ	-1.358105E-05	9.747649E-04	0.0	0.0	0.0	3.971793E-04
ო	IJ	-2.716210E-05	4.039337E-03	0.0	0.0	0.0	8.357214E-04
4	IJ		9.397532E-03	0.0	0.0	0.0	1.314407E-03
5	IJ	-5.432421E-05	1.724578E-02	0.0	0.0	0.0	1.831904E-03
φ	O	-6.790526E-05	2.777760E-02	0.0	•	0.0	2.3867755-03
7	U		4.117304E-02	0.0	0.0	0.0	2.9774755-03
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0	ŋ	-1.222295E-04	1.0025525-01	0.0	0.0	0.0	4.947659E-03
-	O	٠	1.257731E-01	0.0	•	0.0	5.6643275-03
12	U	•	1.5594216-01	0.0	0.0	0.0	6.407710E-03
13	IJ	.629726	1.908905E-01	0.0	•	0.0	7.175742E-03
14	g	-1.765537E-04	2.287016E-01	0.0	•	0.0	7.9450526-03
15	_ن	-1.901347E-04	2.703049E-01	0.0		0.0	8.692268E-03
16	IJ	-2.0371585-04	3.1558488-01	0.0	•	0.0	9,4153125-03
17	O	.172968	3.644153E-01	0.0	0.0	0.0	1.011217E-02
8	IJ	-2.3087795-04	4.166606E-01	0.0	•	0.0	1.078091E-02
19	IJ			0.0	•	0.0	1.141967E-02
50	IJ	-2.580400E-04	5.308055E-01	0.0	0.0	0.0	1.202668E-02
21	O	-2.716210E-04	5.923876E-01	0.0	0.0	0.0	1.260024E-02

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RIGID FORMAT SERIES

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8/15/79 SYSTEM GENERATION DATE

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ID NASTRAN, DEMO APP DISP SOL 5,0 TIME 10 CEND

E C H O TITLE=NASTRAN COURSE - - - DEMO. PROB. 5
SUBTITLE=BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRING
SPC= 11
DISP=ALL
GLOAD=ALL
SUBCASE 1 U ff C x CONTROL LABEL = LINEAR STATIC SOLUTION
LOAD=22
SUBCASE 2
LABEL=EIGENVALUES (BUCKLING LOAD FACTOR)
METHOD=41
BEGIN BULK CASE

*** USER INFGAMATION MESCAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

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PROB. 5	WITH SCALAR
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NASTRAN COURSE --- DEMO. PROB. 5 BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRING

DECEMBER 27, 1979 NASTRAN 8/15/79

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NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

34 STARTING WITH ID *** SYSTEM INFORMATION MESSAGE 3'13, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

12 STARTING WITH ID *** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

25

NASTRAN COURSE --- DEMO. PROB. 5 BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRING

PAGE

SYSTEM WARNING MESSAGE 3022

ROUTE, CURRENT DMAP PREVIOUS MODULE IN THE 4 OUTPUT BY IS REQUIRED AS INPUT AND IS NOT DATA BLOCK PLTPAR

SYSTEM WARNING MESSAGE 3022

ROUTE DMAP CURRENT PREVIOUS MODULE IN THE 4 IS REQUIRED AS INPUT AND IS NOT OUTPUT BY DATA BLOCK GPSETS

SYSTEM WARNING MESSAGE 3022

DMAP CURRENT PREVIOUS MODULE IN THE A 1 OUTPUT ICN SI IS REQUIRED AS INPUT AND DATA BLOCK ELSETS

SYSTEM WARNING MESSAGE 3022

CURRENT DMAP PREVIOUS MODULE IN THE ⋖ OUTPUT BY IS NOT AS INPUT AND IS REQUIRED DATA BLOCK PLTPAR

SYSTEM WARNING MESSAGE 3022

ROUTE CURRENT DMAP IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE DATA BLOCK GPSETS

SYSTEM WARNING MESSAGE 3022

ROUTE IS REQUIRED AS INPUT AND IS NOT GUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP DATA BLOCK ELSETS

S AVG = PREFACE LOOPS = 900 ***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KAA (N = 1 C AVG = 4 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE= -28488 C MAX = 5 PCMAX = 0 PC GROUPS = 1

*** SYSTEM WARNING MESSAGE 3022

ROUTE GUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP IS REQUIRED AS INPUT AND IS NOT DATA BLOCK PLTPAR

SYSTEM WARNING MESSAGE 3022

CURRENT DMAP HE PREVIOUS MODULE IN **DUTPUT BY A** IS NOT IS REQUIRED AS INPUT AND DATA BLOCK GPSETS

SYSTEM WARNING MESSAGE 3022

CURRENT DMAP ROUTE. HH IS REQUIRED AS INJUT AND IS NOT CUTPUT BY A PREVICUS MODULE IN DATA BLOCK ELSETS

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*** USER INFORMATION MESSAGE 3035

1 EPSILON SUB E = -2.5209752E-10 FOR LOAD METHOD 1 T , NBR PASSES = 1, EST. TIME =

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SUBCASE 1

NASTRAN COURSE --- DEMO. PROB. 5 BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRING

LINEAR STATIC SOLUTION

	R3	0.0	9.759310E-06	2.060493E-05	3.253687E-05	4.5555116-05	5.965967E-05	7.4850535-05	9.112771E-05	1.0849125-04	1.269410E-04	1.4647716-04	1.670995E-04	1.888083E-04	2.110502E-04	2.3331215-04	2.5556405~04	2.7781585-04	3.000677E-04	3.223196E-04	3.4457156-04	3.668234E-04
	R2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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ACEMENT	T3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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	=	0.0	-5.432421E-07	-1.086484E-06	-1.629726E-06	-2.172968E-06	-2.716210E-06	-3.259452E-06	-3.802694E-06	-4.345937E-06	-4.889179E-06	-5.432421E-06	-5.975663E-06	-6.518905E-06	-7.062147E-06	-7.605389E-06	-8.148631E-06	-8.691873E-06	-9.235115E-06	-9.778357E-06	-1.032160E-05	-1.086484E-05
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NASTRAN COURSE – – - DEMO. PROB. 5 BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRING

LINEAR STATIC SOLUTION

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DECEMBER 27, 1979 NASTRAN 8/15/79

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DECEMBER 27, 1979 NASTRAN 8/15/79 PAGE

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NASTRAN COURSE - - - DEMO. PROB. 5 BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRINS

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT GUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK PLTPAR

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT GUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK GPSETS

*** SYSTEM WARNING MESSAGE 3022

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*** SYSTEM WARNING MESSAGE 3022

DATA BLOCK PLTPAR

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*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT GUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK GPSETS

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK ELSETS

60) 0 S AVG • 0 PREFACE LOOPS • ***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA (N = TIME ESTIMATE= 1 C AVG = 4 PC AVG = O SPILL GROUPS = ADDITIONAL CORE= -23722 C MAX = 5 PCMAX = 0 PC GROUPS =

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EIGENVALUE ANALYSIS SU :I MARY (INVERSE POWER METHOD)

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NASTRAN COURSE DEMO. PROB. 5 BUCKLING OF CANTILEVER BEAM WITH SCALAR SPRING	DECEMBER	27, 1	979	NASTRAN	DECEMBER 27, 1979 NASTRAN 8/15/79 PAG	PAG
EIGENVALUES (BUCKLING LOAD FACTOR) EIGENVALUE = 7.898135E+01					SUBCASE 2	α,

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-	R2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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1135E+01	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	٥.٥	0.0	0.0	0.0	0.0	0.0	0.0
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DECEMBER 27, 1979 NASTRAN COURSE - - DEMO. PROB. 6 PIECEWISE LINEAR ANALYSIS

1979 NASTRAN 8/15/79 PAGE

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FIVE ELEMENT FRAME--ROD ELEMENTS

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*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

NASTRAN COURSE - - - DEMO. PROB. 6 PIECEWISE LINEAR ANALYSIS

PAGE NASTRAN 8/15/79 **DECEMBER** 27, 1979

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NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

1 STARTING WITH ID *** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

6) 0 S AVG # 0 PREFACE LOOPS # ***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KLL (N = 1 C AVG = 2 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE = -25461 C MAX = 4 PCMAX = 0 PC GROUPS = 1

1,EST. TIME MPYAD--NULL MATRIX PRODUCT METHOD 1 NT.NBR PASSES = 218

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NASTRAN COURSE - - - DEMO. PROB. 6 PIECEWISE LINEAR ANALYSIS

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NASTRAN 8/15/79

DECEMBER 27, 1979

FIVE ELEMENT FRAME--ROD ELEMENTS

*** USER INFORMATION MESSAGE 3035

1 EPSILON SUB E = -5.5382952E-14 FOR LOAD

1,EST. TIME = WEPYAD--NULL MATRIX PRODUCT METHOD 3 I ,NBR PASSES =

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NASTRAN CGURSE - - DEMO. PROB. 6 PIECEWISE LINEAR ANALYSIS

NASTRAN 8/15/79 27, 1979 DECEMBER

FIVE ELEMENT FRAME -- ROD ELEMENTS

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AXIAL SAFETY
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1.414214E+04
1.414214E+04 LOAD FACTOR ELEMENTS ELEMENT ID. S R D D SAFETY Maagin STRESSES I SAFETY TORSIONAL MARGIN STRESS 0.0 0.0 -1.0E+00 0.0 -1.0E+00 AXI:L STRESS 1.414214E+04 1.414214E+04 -2.000000E+04 ELEMENT . 0

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6) 0 S AVG = 0 PREFACE LOOPS =

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KIL (N = TIME ESTIMATE= 1 C AVG = 2 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE= -25461 C MAX = 4 PCMAX = 0 PC GROUPS =

SAFETY

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NASTRAN COURSE - - - DEMO. PROB. 6 PIECEWISE LINEAR ANALYSIS

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DECEMBER 27, 1979

FIVE ELEMENT FRAME--ROD ELEMENTS

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT CUTPUT BY A PREVICUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK KLR

*** SYSTEM WARNING MESSAGE 3022

DATA BLOCK KRR

IS REQUIRED AS INPUT AND IS NOT CUTPUT BY A PREVICUS MODULE IN THE CURRENT DMAP ROUTE.

MPYAD--NULL MATRIX PRODUCT METHOD 1 NI,NS. PASSES = 1,EST. TIME =

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*** USER INFORMATION MESSAGE 3035

FOR LOAD 2 EPSILON SUB E = -2.8105145E-14

MPYAD--NULL MATRIX PRODUCT METHOD 3 I ,NBR PASSES = 1,EST. TIME =

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DECEMBER 27, 1979 NASTRAN 8/15/79

LOAD FACTOR 2

FIVE ELEMENT FRAWE--ROD ELEMENTS

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E L E M E N T S ELEMENT 10. 2 2.
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SAFETY MARGIN -1.05+00
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ELEMENT 10.

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NASTRAN COURSE - - - DEMO. PROB. 6 PIECEMISE LINEAR ANALYSIS

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DECEMBER 27, 1979

FIVE ELEMENT FRAME -- ROD ELEMENTS

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCH HLR

*** SYSTEM AARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT CUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK KRR

MPYAD--NULL MATRIX PRODUCT WETHOD 1 NT.NBR PASSES = 1.EST. TIME = .0

*** USER INFORMATION MESSAGE 3035

FOR LOAD

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SAFETY

FIVE ELEMENT FRAME -- ROD ELEMENTS

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NASTRAN COURSE - - - DEMO. PROB. 6 PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS

*** SYSTEM WARNING MESSAGE 3022

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*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT CUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK KRR

MPYAD--NULL MATRIX PRODUCT METHOD 1 NT.NBR PASSES = 1,EST. TIME =

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*** USER INFORMATION MESSAGE 3035

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LOAD FACTOR 4

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NASTRAN COURSE - - - DEMO. PROB. 6 PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS

*** SYSTEM AARNING NESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT CUTPUT BY A PREVICUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK KLR

*** SYSTEM WARNING MESSAGE 3022

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*** USER INFORMATION MESSAGE 3035

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DECEMBER 27, 1979 NASTRAN 8/15/79 PAGE

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NASTRAN COURSE - - - DEMO. PROB. 6 PIECEMISE LINEAR ANALYSIS

FIVE ELEMENT FRAME -- ROD ELEMENTS

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*** SYSTEM WARNING MESSAGE 3022

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DECEMBER 27, 1979 NASTRAN 8/15/79 PAGE

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NASTRAN COURSE - - - DEMO. PROB. 6 PIECEWISE LINEAR ANALYSIS

FIVE ELEMENT FRAME--ROD ELEMENTS

*** SYSTEM WARNING MESSAGE 3022

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FIVE ELEMENT FRAME -- ROD ELEMENTS

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NASTRAN COURSE - - - DEMO. PROB. 7 DIRECT COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE POWER WETHOD.

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CANTILEVER BEAM WITH VISCOUS DAMPING.

NASTRAN COURSE - - - DEVO. PROB. 7 DIRECT COMPLEX ELGENVALUE ANALYSIS

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CAZITLEVER BEAN WITH VISCOUS DAMPING.	COMPLEA ELGENVALUE = -7.702347E+00, 0.005942E+01	
A HILM KIES	SENVALUE = .	
CANTILEVER E	COMPLEX ELG	
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NASTRAN COURSE DIRECT COMPLEX	E I GEN	- DEMO, PROB, 7 VALUE ANALYSIS			DECEMBER	27, 1979	NASTRAN 8/15/79
CAVITUEVER B	# # # 5 5 4 10 0	VISCOUS DAMPING	:	INVERSE POWER METHOD.			
4	U 5 4 8 8	0	0	I C E N V E C T CO (MAGNITUDE/PHASE)	ου α	a	
POINT 10.	TYPE	7.1	4.0	13	5	82	83
-	v	0.0	0.00		0.0	0.0	0.0
ო	Ø	4.063456E-35 317.8289	8.919594E-02 197.1089		0.0	0.0	1.621423E-02 196.9636
ហ	IJ	8.036733E-35 317.8289	2,916312E-01 196,8110		0.0	0.0	2.259720E-02 196.3830
1-	Ø	1,180712E-34 317,8289	5.116119E-01		0.0	0.0	2.002317E-02 195.5660
თ	Ø	1.528577E-34 317.8289	6.6-2972E-01 196.1856		0.0	0.0	1.032381E-02 194.9154
Ξ	U	1.839001E-34 317.6289	7.032956E-01 190.2579		0.0	0.0	3,865697£-03 6,2839
13	U	2.104043E-34 317.8289	5.va1575£-01 197.9839		0.0	0.0	1.949196E-02 6.7812
ر ا	ڻ ن	2.317276E-34 317.8289	3.3176515-01 207.4884		0.0	0.0	3.319088E~02 6.0618
17	O	2.473450E-34 317.8289	1,401464E-01 307,6059		0.0	0.0	4.238514E-02 6.5876
19	U	2.563720E-34 317.3289	5.344831E-01 353.7905		0.0	0.0	4.604328E-02 6.9882
2	O	2.600739E-34 317.8289	1.000000E+00 0.0	0.0	0.0	0.0	4.745054E-02 7.0593

NASTRAN COURS DIRECT COMPLE	u ≺	EIGENVALUE ANALYSIS			DECEMBER	27, 1979	NASTRAN 8/15/79
CANTILEVER COMPLEX EI	BEAM WITH IGENVALUE	VISCOUS DAMPING = -4.744382E+00, C	1.931617E+02 ONPLEXEI	WER GETHOD. I G E N V E C T (MACNITUDE/PHASI	T D R NO.	ო	
POINT ID.	TYPE	11	12	13	Ŗ.	R2	R3
-	r5	0.0	0.0		0.0	0.0	0.0
ĸ	v	3.098330E-36 235.4857	2.321009E+01 355.3217		0.0	0.0	3.829996E- 02 355.0952
ß	IJ	6.120368E-36 235.4857	6.167289E-01 354.8120		0.0	0.0	3.203183E- 02 353.4879
7	Ø	8.991703E-36 235.4857	7.751933E-01 353.7560	0.0	0.0	0.0	3.573308E-03 208.2632
O	v	1.164163E-35 235.4857	5.444772E-01 350.9601	0.0	0.0	0.0	4.076978E-02 178.2937
-	ιo	1.400440E-35 235.4857	7.028789E-02 298.4988	0.0	0.0	0.0	5.637592E-02 176.8325
£-	g	1.602333E-35 235.4857	4,730885E-01 184,2269	0.0	0.0	0.0	3,894542E-02 177,4213
15	IJ	1.764720E-35 235.4857	6.553537E-01 182.5221	0.0	0.0	0.0	2.765368E-03 359.1767
17	_O	1, y83655 £ -35 235, 4657	4.0v8532E-01 183.8495		0.0	0.0	4.706312E-02 .6844
† 6	_U	1.956207 E- 35 235.4857	2.177670E-01 355.5203	0.0	0.0	0.0	7.401593E-02 1.1669
21	v	1.980592 £- 35 235.4857	1.000000E+00		0.0	0.0	8.008462E-02 1.2770

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CANTILEVER BEAM WITH VISCOUS DAMPING. INVERSE SOMER VETHOD.
COMPLEX EIGENVALUE = -4,887657E+00, 1,0195846+01
C D M P L E X F D R C E S I N B J

TORQUE 0.0 0.0 0.0 <u>0</u>.0 0.0 3.153768E-37 357.2138 2.951121E-37 357.2138 2.478618E-37 357.2138 8.567207E-38 357.2138 1.753491E-37 357.2138 AXIAL FORCE (C B A P) PLANE 1 PLANE 0.0 0.0 0.0 0.0 0.0 IN BAR ELEMENTS (MAGAITUDE/PHASE) 1.312674E+00 342.9564 1.303765E+00 342.2498 1.262344E+00 338.3079 8.105758E-01 49.8811 4.452935E-01 50.6598 Ŋ BEND-MOMENT END-B PLANE 1 PLANE 0.0 0.0 0.0 0.0 0.0 7.841785E+01 352.7255 2.944997E+01 12.8781 3.040242E+00 50.9467 5.284089E+01 357.6897 1.491955E+01 50.4574 BEND-MOMENT END-A 0.0 0.0 0.0 0.0 0.0 8.489353E+01 351.9746 5.9:4992£+01 356.0084 5.266693E+00 50.8255 1.897237E+01 50.3343 3.483184E+01 6.9766 S σ 5 7 ELENENT ID.

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NASTRAN COURSE - - - DEMO. PROB. 7 DIRECT COMPLEX EIGENVALUE ANALYSIS CANTILEJER BEAM WITH VISCOUS DAMPING. INVERSE POAER WETHOD. COMPLEX EIGENVALUE = -7.702347E+00, 6.805942E+01 COMPLEX FORCES IN 8

0.0 0.0 0.0 。 。 。 3.756186E-29 317.8289 3.526739E-29 317.8289 2.952069E-29 317.8289 2.088431E-29 317.8289 1.020365E-29 317.8289 AXIAL FORCE 8 A R) N 0.0 - SHEAR -PLANE 1 PLANE . 0.0 0.0 0.0 0.0 ပ) 8.643957£+00 179.9627 2.255891E+01 198.5397 IN BAR ELEMENTS (MACNITUDE/PHASE) 1.952827E+01 196.7577 8.023862E+00 343.8637 1.110253E+01 8.2207 Ŋ BEND-MOMENT END-B 0.0 0.0 0.0 0. 0. 0. 0.0 3.6417c6E+02 196.9578 6.088799E+01 23.0066 3.225695E+02 12.8003 3,10781,5+02 9.389402E+01 BEND-MOMENT END-A PLANE 1 PLANE 2 0.0 0.0 0.0 0.0 0.0 4.769383E+02 3.770222E+01 186.6334 2.805944E+02 3.484310E+02 2.9024 1.493642E+02 9.9972 S σ 13 17 ELEWENT ID.

<u></u>		TORQUE	0.0	0.0	<u>0</u> .0	0.0	0.00
PAGE							
NASTRAN 8/15/79		AXIAL FORCE	2.860521E-30 235.4857	2.685786E-30 235.4857	2.248147E-30 235.4857	1.590444E-30 235.4857	7.770586E-31 235.4857
	84 87 (ы 7					
1979	υ 	R - PLANE	0.0	0.0	0.0	0.0	0.0
DECEMBER 27, 1979	ELEMENTS (CBAR) E)	- SHEAR - PLANE 1 P	1.098295E+02 356.4145	5.325026E+01 354.8971	6.322194E+01 176.8565	4.651129E+01 191.4052	4.993507E+01
	(A	T END-B PLANE 2	0.0	0.0	0.0	0.0	0.0
	INVERSE POWER METHOD. 1.931617E+02 FORCESINBAR (MAGNITUDE/PHAR	BEND-MOMENT END-B	8.570275E+02 0.0 355.0819 0	8.258869E+02 176.8421	3.082820E+02 172.83⊍6	9.695013E+02 357.8069	6.124908E+02 2.1338
O. PROB. 7 ANALYSIS		T END-A PLANE 2	o. o. o.	0.0	0.0	0.0	0.0
NASTRAN COURSE DEMO. PROB. Direct complex eigenvalue analysis	CANTILEVER BEAM WITH VISCOUS DAMPING. COMPLEX EIGENVALUE = -4.744382E+00. C O M P L E X	BENG-MOMENT END-A	1,4060A4E+03 0.0 355.6023 0.0	5,598619E+02 0.0 177.7669 0.	6.839718E+02 174.6930	7.454718E+02 353.6007	8.620882E+02 0.0 1.6418 0.
NASTRAN COURSE DIRECT COMPLEX	CANTILEVER B COMPLEX EIG	ELEMENT IO.	-	ស	O	13	17

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NASTRAN COURSE - - - DEMD. PROB. 8 DIRECT FREQUENCY RESPONSE ANALYSIS

CANTILEVER REAM WITH SINUSGIDAL LOAD

¥ 0 E C TITLE=NASTRAN COURSE --- DEVO. PROB. 8
SUBTITLE=DIRECT FREDUENCY RESPONSE ANALYSIS
LABEL=CANTILEVER BEAM WITH SINUSCIDAL LOAD
SVC= 11
DUCAD=61
FREDUENCY=33
CFUED=CVCY=33
CFUED=CVCY=33
CFUED=ALL
SET 13=1.3.5.7.9.11,13 THRU 17,19,21
DIUP PHASE!=10
VELOCITY (PHASE) = 13
CLOAD(PHASE)=ALL
BEGIN BULK O a: ► 2 0 O ш S -1 O 00 400-084000000000-0-0

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SCRTED, XSORT WILL RE-DRDER DECK.

PAGE NASTRAN 8/15/79 0 +STEEL +P3; +P3;A Œ DECEMBER 27, 1979 C ω ö r 0 . o 345 。 ~ .30/80 ;3 7.324-4 -0.3125 0, 490-3 7.490-3 1.498-2 0, 0.3125 (3 ď. O 7 :0 Э S æ Ö ш æ O Ø ന : 5 30.+6 32 0.75 62 7 . NASTRAN COURSE - - OFFOL PROS. B DIRECT FREGUENCY RESPONSE ANALYSIS CANTILEVER BEAM ALTH SINUSOLDAL LOAD 20 21 32 31 31 31 35 60.75

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NASTRAN COURSE - - - DEVOL BROBE B DIRECT FREQUENCY RESPONSE ANALYSIS CANTILEVER BEAU AITH SINUSCIDAL LOAD

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NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM*

34 STARTING WITH ID *** SYSTEM INFORMATION NESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

60) 0 S AVG = 0 PREFACE LOOPS =

WETHOD 1 T .NBR PASSES = 1,EST. TIME =

NASTRAN COLREG - - - DEMO. PROB. B DIRECT FREQUENCY RESPONSE ANALYSIS CANTILEVER BEAM WITH SINOSOIDAL LOAD

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DECEMBER 27, 1979 NASTRAN 8/15/79

		V E C → O R
		A VIO X WILE ROOM
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CAZILLEVER BELL	FREQUENCY	

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DECEMBER 27, 1979 NASTRAN 8/15/79 NASTRAN COURSE - - - DEMO. PROB. 8 DIRECT FREQUENCY RESPONSE ANALYSIS

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	T 0 R		0.0	0.0
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	COMPLEX VELOCITY VECTOR (MAUNITUDE, PHASE)	13	0.0	0.0
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12	0.0	2.572474E-01 273.0300	5.972508E-01 270.0000	1,273*18E+00 270.0050	2.140540E+00 270.0000	3.159334E+00 270.0000	4.2774508+00 270.0000	4 0041296+00 270.0000	5.5333706+00 270.0000	8.15551E+00 270.0000	6.861334E-00 270.0000	8.25197.8+00 270.000	9.6622335+00 270.0000
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NASTRAN COURSE - - - DEMO, PROB. 8 DIRECT FREQUENCY RESPONSE ANALYSIS

	VECTOR
	COMPLEX DISPLACEMENT VECTOR
מאסי	C C :: P L E
CANTILEVER BEAW AITH SINUSOIDAL LOAD FREQUENCY = 7.000000E+00	

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σ	ø	0.00	1.065039E-02 180.0000	0.0	0.0	0.0	5.113493E-04 180.0000
	()	0.0	1.54138JE-02 180.0000	0.0	0.0	0.0	6.457367E-04 180.0000
13	cj.	0.0	2.370137E+02 180.0000	0.0	0.0	0.0	8,216039E-04 180,0000
4	(J	0.0	2.808714E-02 160.0000	0.00	0.0	0.0	9.366376E-04 180.0303
15	IJ	°.°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°°	3.311034E-02 180.0000	0.0	0.0	0.0	1.0777545-03 180.0000
16	U	0.0	3.871935E-02 180.0000	0.0	0.0	0.0	1.252352E-03 180.0000
17	J	0.0	4.8-11-28-102 -30-0000	0.0	0.0	o.o o.o	1,4135:1E-03 180.0000
Ø F	o .	0.0	6.07.4349E-02 180.0000	0.0	0.0	0.0	1.571149£-03 180.0000
G T	U	0.0	7.559869E-02	0.0	0.0	0.00	1,598017E-03 180,0000

NASTRAN COURSE - - COMO, PROB. 8 OTRECT PREQUENCY RESPONSE ANALYSIS

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NASTRAN COURSE - DIRECT PREQUENCY R	1 111	SPONSE ANALYSIS	ස		DECEMBER	27, 1979	NASTRAN 8/15/79	PAGE
CANTILE JER	BEAM WITH	WITH SINUSGIDAL LOAD	C					
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ம	(9	0.0	1.235.43E-01 270.0000	0.0	0.0	0.0 0.0	1.1473208-02 270.0000	
7	IJ	0.0	2.6991938-01 270.0000	0.0	o.o.	0.0 0.0	1.7252626-02	
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-	ø	0.0	7.219110E-01 273.0000	0.0	0.0	0.0	2.8400085-02 270.0000	
13	ڻ د	0.0	1.042441E+00 270.0000	0.0	0.0	0.0	3.6.0404040 2000000000000000000000000000000	
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to To	IJ	0.0	1.456269E+00 270.0000	0.0	0.0	0.0	4, 462106-02 270.0000	
16	O	0.0	1.711762E+00 270.0000	0.0	0.0	0.0 0.0	00-314-814-8 00-32-1-23	
17	ø	0.0	2.306117E+00 273.0000	0.0	0.0	0.0	8.2469478-02 270.0000	
9	O	0.0	2.609439E+00 270.0000	0.0	0.0	0.0	6.410498-02 270.0000	
21	O	0.0	3.3489656+00 270.0030	0.0	0.0	o.o	7.028446E-02 270.0000	

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NASTRAN COURSE - - - DEWO, PROB. 8
DIRECT FREQUENCY RESPONSE ANALYSIS
CANTILEVER BEAM AITH SINUSGIDAL LOAD
FREQUENCY = 3.0000002E+CO

COMPLEX LOAD VECTOR (MACNITUDE/PHASE)

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NASTRAN COURSE DEMO, PROB, 9 Direct frequency response analysis	CANTILEVER BEAM WITH SINUSUIDAL LCAD FREQUENCY = 7.000000E+00		F	0.0
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RESTART NASTRAN , DEMO

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PAGE

σ NASTRAN COURSE - - - DEMO. PROB. DIRECT TRANSLENT ANALYSIS 5,8-INCH DIADETER STEEL BEAM

× ပ uj ۵ TITLE=NASTRAY COURSE - - DEWO. PROB. 9
SUBTITLE=DIRECT TRAYSIENT ANALYSIS
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NASTRAN COURSE - - - - DEVO. PROB. 9
DARECT TRANSIENT ANALYSIS

5/8-INCH DIAMETER STEEL BEAM

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FEBRUARY 9, 1981 NASTRAN 12/15/80

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NASTRAN COURSE - - DEMO. PROB. 9 DIRECT TRANSFENT ANALYSIS

S/8-INCH DIAMETER STEEL BEAM

NASTRAN COCRSS - - - DEMO. PROB. 9 Direct transient analysis

5,8-1404 DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DRAP COMPILER - SOURCE LISTING

OPTIONS IN EFFECT 33 ERR=2 NGLIST NODECA 194EF NODSCAR

BEGIN NO.9 DIRECT TRANSIENT RESECNSE AMALYSIS - SERIES P \$

FILE NGGARTAFE KGGETAPE, USVTRAPPEND, TOLEAPPEND \$

GP1 GECM1.0F3V2,/GPL,EQEXIN,GP01,CST41,8GPD1,S1L/V,N,EUSET/ V,N, N, CUSET/ V,N, C

SAVE LUSET, NOUPDT 8

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C

PURGE USET GN, GO, KAAA, BAA, MAA, KAAA, PST, KFS, QP, EST, ECT, PLTSETX, PLTPAR, GRSETS, ELSETS, ELSETS, NOGPOT \$

CHAPNI GP.. FUEKIN, GPDI, CSIM, BGPDI, SIL, USEI, GM.GO, NAA, BAA, MAA, KAAA,
PSI, AFS, GP. ESI, ECI, PLISEIX, PLIPAR, GPSEIS, ELSEIS S

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GP2 GECM2.EDEXIN, ECT \$

CHAPMT ECT \$

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10 PERAME PCDB CIN, PRES/CIN, CIN, CIN, VIN, NUFCDB 8

PLISETX, PLIPAR, GPSETS, ELSETS WORCDS &

12 C3:0 01,109C0d \$

43 purser pobalicarin, ECT/PLTSETX, PLIPAR, GASETS, ELSETS, V.W.NSIL/V. Junea, Other 5

\$ _CT#:::^^ T:\$% 3/"

15 20775G PLTSETA \$

16 PARAM / CINIDRY/VINIPLE 16, CINITICINIT 5

6 0.8.0 0.8.0 BILLETT, 2.10, 20.1.0 C. 2.0 C. 2.0 G

60 LOTE 25 The Control of the Control

20 SAVE USTROLUTIPLIFICE, PFILE S

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DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/8 9/2
MASTRAN SAMPLE PROBLEM COMPUTER OUTPUT, (U)
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DTMSRCC/CMLD-81-04 NL AD-A096 867 UNCLASSIFIED 4 0 5 40 4096167

5/8-INCH DIAMETER STEEL BEAM

SOURCE LISTING 1 LEVEL 2.0 NASTRAN DMAP COMPILER

<u>-</u> LABEL PLTPAR, GPSETS, ELSETS \$ CHKPNT 23 GEOM3, EQEXIN, GEOM2/SLT, GPTT/V, N, NOGRAV GP3 24

SLT, GPTT \$ CHKPNT 25 ECT, EPT, BGPDT, SIL, GPTT, CSTM/EST, GEI, GPECT,,,/V,N,LUSET/V,N, NOSIMP=-1/C,N,1/V,N,NOGENL=-1/V,N,GENEL \$ TA1 26

NOSIMP, NOGENL, GENEL SAVE 27

K4NN, K4FF, K4AA, MNN, MFF, MAA, BNN, BFF, K4GG.GPST,OGPST,MGG,BGG, K4NN,BAA,KGGX/NOSIMP/ DGPST/GENEL \$ PURGE 28

KANN, KAFF, KAAA EST, GPECT, GEI. K4GG, GPST, MGG, BGG, KGGX, OGPST, MNN, MFF, MAA, BNN, BFF, BAA \$ CHKPNT 29

LBL1, NOSIMP COND //C.N.ADD/V.N.NDKGGX/C.N.1/C.N.0 PARAM 31

//C.N.ADD/V.N.NGMGG/C.N.1/C.N.0 PARAM 32

₩ //C,N,ADD/V,N,NDBGG=-1/C.N,1/C,N,0 PARAM 33

//C.N.ADD/V.N.NOK4GG/C.N.1/C.N.0 PARAM EST.CSTM.MPT.DIT.GEGM2./KELM.KDICT.WELM.MDICT.BELM.BDICT/ V.
N.NOKGGX/V.N.NOMGG/V.N.NOBGG/V.N.NOK4GG/C.N./C.Y.COUPMASS/C.Y.
CPBAR/C.Y.CPROD/C.Y.CPQUAD1/C.Y.CPQUAD2/C.Y.CPTRIA1/C.Y.
CPTRIA2/C.Y.CPTUBE/C.Y.CPQDPLT/C.Y.CPTRPLT/C.Y.CPTRBSC \$ EMG

NOKGGX, NOMGG, NOBGG, NOK 4GG \$ SAVE 36

KELM. KDICT, MELM, MDICT, BELM, BDICT CHKPNT 37

LBLKGGX, NOKGGX \$ COND 38 GPECT, KDICT, KELM/KGGX, GPST EMA

KGGX, GPST \$ CHKPNT 40

LBLKGGX \$

LABEL

4

LBLMCG, NOMGG \$ COND GPECT, MDICT, MELM/MGG, /C, N, -1/C, Y, WTMASS=1.0 \$ EMA 43

NASTRAN COURSE - - - DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

MGG \$ CHKPNT 44

LBLMGG \$ LABEL

> 45 46

LBLBGG, NOBGG \$ COND GPECT, BDICT, BELM/BGG. \$ EMA

47

LBLBGG \$ LABEL

49 20 51 52

LBLK4GG,NOK4GG \$

GPECT, KDICT, KELM/K4GG, /v, N, NOK4GG \$ EMA

₩46G \$ CHKPNT LBLK4GG \$ LABEL 53 MNN, MFF, MAA/NOMGG \$ PURGE

54

BNN, BFF, BAA/NOBGG \$ PURGE 52 MGG, MNN, MFF, MAA, BGG, BNN, BFF, BAA \$ CHKPNT

LBL1.GRDPNT \$ COND 57

26

ERROR3, NOMGG \$ COND 58 BGPDT, CSTM, EQEXIN, MGG/DGPWG/V, Y, GRDPNT =-1/C, Y, WTMASS \$ GPWG 29

@GPWG....,// \$ 0 r p

9

LBL1 \$ LABEL 61

KGGX, KGG/NDGENL \$ EQUIV

62

KGG \$ CHKPNT 63

LBL11, NOGENL \$ COND

64

GET, KGGX/KGG/V, N, LUSET/V, N, NOGENL/V, N, NOSIMP \$ SMA3 65

KGG \$ CHKPNT

99

LBL11 \$ LABEL 67

//C.N.MPY/V.N.NSKIP/C.N.O/C.N.O \$ PARAM 89

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NASTRAN 12/15/80

FEBRUARY 9, 1981

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5/8-INCH DIAMETEP STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

GUSET.ASET/ V.N.LUSET/ II/V.N.REACT/V.N.NSKIP/V. Y.SUBID S.
CASECC.GEOM4.EQEXIN.GPDT.GGPDT.CSTM/RGUSET.ASET/ V.N.LUSET/ V.N.MPCF1/V.N.MPCF2/V.N.SINGLE/V.N.OMIT/V.N.REACT/V.N.NSKIP/V. N.REPEAT/V.N.NDSET/V.N.NGL/V.N.NDA/C.Y.SUBID \$
GP4

69

M. KEPEAT/V.N. NOSET/V.N. NOL/V.N. NOA/C. Y. SUBID \$	/E MPCF1,SINGLE,OMIT,NOSET,REACT,MPCF2,NSKIP,REPFAT NO! MOA &	
	70 SAVE	
	20	•

LBL4, NOSIMP \$

COND

⁸⁶ CHKPNT KNN, MNN, BNN, K4NN \$

⁸⁹ CHKPNT KFF, MFF, BFF, K4FF \$

⁹⁰ COND LBL3,SINGLE \$

⁹¹ SCE1 USET,KNN,MNN,BNN,K4NN/KFF,KFS, ,MFF,BFF,K4FF \$

⁹² CHKPNT KFS, KFF, MFF, BFF, K4FF \$

5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

LBL3 \$	KFF, KAA/OMIT \$
LABEL	EQUIV
93	94

BFF, BAA/OMIT \$ EQUIV 96

MFF. MAA/O'MIT \$

EQUIV

95

K4FF, K4AA/OMIT \$ EQUIV

97

KAA, MAA, BAA, K4AA \$ CHKPNT 86

LBLS.OMIT \$ COND

66

USET.KFF.,,/GD,KAA,KOD,LOD,,,,, \$ SMP 1 100

GO.KAA \$ CHKPNT 101 LBLM. NOMGG COND 102 USET.GO,MFF/MAA \$ SMP2 103

MAA S CHKPNT 104

LBLM \$ LABEL 105

LBLB.NOBGG \$ COND 106 USET.GO, BFF/BAA \$ SMP2 107

BAA \$ CHKPNT 108

1818 \$ LABEL 109

LBLS NDK4GG \$ COND 110

\$

USET .GO, K4FF/K4AA \$ SWP2 111

K4AA S CHKPNT 112

1815 \$ LABEL 113

DYNAMICS.GPL,SIL,USET/GPLD.SILD.USETD.TFPOOL,DLT.,,NLFT.TRL., EQDYN/V.N,LUSET/V.N,LUSETD/V.N,NOTFL/V.N,NODLT/V,N,NOPSDL/ V. N,NOFRL/V.N,NONLFT/V.N,NOTRL/V.N,NOEED/C.N,/V,N,NOUE \$ 060

LUSETD, NODLT, NONLFT, NOTRL, NOUE \$ SAVE 115

PNLD/NONLFT\$ PURGE 116

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PAGE

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

GO, GOD/NOUE/GM, GMD/NOUE \$ EQUIV USETO, EQDYN, TFPOOL, DLT, TRL, GOD, GMD, NLFT, PNLD, SILD, GPLD \$ CHKPNT 118

MATPOOL, BGPDT, EQEXIN, CSTM/BDPOOL/V, N, NOKBFL/V, N, NOABFL/V, N, BMG 119

MFACT \$

MFACT, NOKBFL, NDABFL \$

SAVE

120

//C.N,AND/V.N,NOFL/V.N,NOABFL/V,N,NOKBFL \$ PARAM 121

KBFL/NOKBFL/ ABFL/NOABFL \$ PURGE

122

LBLFL3, NOFL \$ COND 123 .BDPGJL,EQDYN.,/ABFL,KBFL,/v,N,LUSETD/V,N,NDABFL/V,N,NOKBFL/C, N,O \$ MTRXIN, 124

NOABFL, NOKBFL \$ SAVE

125

LBLFL3 \$ LABEL 126

ABFL.KBFL \$ CHKPNT 127

CASECC,MATPOOL,EQDYN,,TFPOOL/K2OPP,M2DPP,B2PP/V,N,LUSETD/V,N, NOK2OPP/V,N,NOM2DPP/V,N,NOG2PP \$ MTRXIN 128

NOK20PP, NOM20PP, NOB2PP \$ SAVE 129 //C.N.AND/V.N.NOM2PP/V.N.NOABFL/V.N.NOM2DPP \$ PARAM 130

//C,N,AND/V,N,NOK2PP/V,N,NOFL /V,N,NOK2DPP PARAM 31

M2DPP, M2PP/NDABFL \$ EQUIV 132

ABFL.KBFL,K2DPP,,/K2PP/C,N,(-1.0,0.0) \$ ADD5 133

LBLFL2, NOABFL \$ COND 134

ABFL/ABFLT \$ TRNSP 135 ABFLT, M2DPP/M2PP/V, N, MFACT \$ ADD 136

LBLFL2 \$ LABEL 137

//C,N,AND/V,N,KDEKA/V,N,NOUE/V,N,NOK2PP \$ PARAM

//C.N.AND/V.N.MDEMA/V.N.NOUE/V.N.NOM2PP \$ PARAM

//C.N.AND/V.N.KDEK2/V.N.NDGENL/V.N.NDSIMP \$ PARAM 140

NASTRAN COURSE - - DEMO. PROB. DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETEP STEEL BEAM

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- SOURCE LISTING LEVEL 2.0 NASTRAN DMAP COMPILER K2DD/NOK2PP/M2DD/NOM2PP/82DD/NOB2PP \$ PURGE 41

KAA. M2PP.M2DD/NOA/B2PP,B2DD/NOA/K2PP.K2OD/NOA/MAA,MDD/MDEMA/ KDD/KDEKA \$ EQUIV 142

K2PP.M2PP, B2PP, K2DD, M2DD, B2DD, M0D, KDD \$

CHKPNT 143

LBL16, NOGPDT

COND

144

GKAD 145

USETD, GM, GO, KAA, BAA, MAA, K4AA, K2PP, M2PP, B2PP/KDD, BDD, MDD, GMD, GOD, K2DD, M2DD, B2DD/C.N, TRANRESP/C.N, DISP/C.N, DIRECT/C.Y, G=0.0/C.Y, W3=0.0/C.Y, W4=0.0/V, N, NOK2PP/V, N, NOM2PP/V, N, NOB2PP/V, N, NOM2PP/V, N, NOB2PP/V, N, NOM2PP/V, N, NOM2PCFI/V, N,

LBL16 \$ LABEL

146

147

M200.MDD/NQSIMP/8200,800/NOGPDT/K200,K00/K0EK2 EQUIV

KDD, BDD, MDD, GMD, GDD \$ CHXPNT 148

ERRORI, NOTRL \$ COND

149

//C.N.ADD/V,N.NEVER/C.N.1/C.N.0 \$ PARAM 150

//C.N.MPY/V.N.REPEATT/C.N.1/C.N.-1 PARAM 151

//C.N.MPY/V.N.CARDNO/C.N.O/C.N.O \$ PARAM 152

LBL13 \$ **PWD** 153

LBL13 \$ LABEL 154

PNLD.OUGV1.GPNL1,OUDV2,DPNL2,XYPLTTA,OPP1,OQP1,OUPV1,OES1,OEF1,OPP2.OQP2,OUPV2,OES2,OEF2.PLOTX2,XYPLTT/NEVER \$ PURGE 155

CASECC./CASEXX/C.N.TRAN/V.N.REPEATT/V.N.NGLOOP \$ CASE 56

REPEATT, NOLOOP \$ SAVE 157

CASEXX \$ CHKPNT 158

//C.N.MPY/V.N.NCOL/C.N.0/C.N.1 \$ PARAM 159

CASExx,USETD.DLT,SLT,BGPDT.SIL,CSTM.TRL,DIT,GMD.GOD..EST,MGG/ PPT,PST,PDT,PD,,TOL/V,N,NOSET/V,N,PDEPDG/V,N,NCOL \$ TRLG 160

PDEPDO, NOSET SAVE 161

PPT, PST, PDT, PD, TOL CHKPNT 162

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5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

PD. POT/PDEPDO/PPT, PDT/NOSET \$ EQUIV 163

PDT \$ CHKPNT 164 CASE(X,TRL,NLFT,DIT,KDD,BDD,MDD,PD/UDVT,PNLD/C.N,DIRECT/V,N,NDUE/V,N,NDNCUP/V,N,NCOL/C,Y,ISTART \$ 180 165

NCOL \$ SAVE

166

UDVT.PNCD \$ CHKPNT 167

168

CASE XX. EODYN. USETD. UDVT. TOL, XYCDB, PNLD/OUDV1, OPNL1/ C.N. TRANRESP/C.N. DIRECT/C.N. O/V.N. NOD/V.N. NOP/C.N. O \$ VOR

& GCN, GON SAVE

169

OUDV1,0PNL1 \$ CHKPNT 170

LBL15,NOD \$ COND 171 OUDV1, OPNL1,..., OUDV2, OPNL2,... \$ SDR3 172

GUDV2. OPNL2..., //V.N.CARDNO \$ d u O

173

CARDNO \$ SAVE 174

OPNL2, OUDV2 \$ CHKPNT 175 XYCDB.OUDV2.OPNL2.../XYPLTTA/C.N.TRAN/C.N.DSET/V.N.PFILE/V.N. CARDNJ \$ XYTRAN 176

PFILE, CARDNO \$ SAVE

177

XYPLTTA// \$ XYPLOT 178 *//C.N.AND/V.N.PUUMP/V.N.NOP/V.N.JUMPPLOT \$ FARAM

LBL15 \$

LABEL

179 180 LBL18,PJUMP \$ COND 181

S ACN/VAU. TVOU EQUIV 182

LBL17.NOA \$ ONOU 183 USETD., UDVT.,, GDD, GMD, PST, KFS,, /UPV,, QP/C, N, 1/C, N, DYNAMICS \$ SDR1 184

LB117 \$ LABEL 185 UPV.QP \$ CHKPNT 186

5/8-INCH DIAMETER STEEL BEAM

NASTRAN COURSE - - - DEMO. PROB. Direct transient analysis

σ

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

CASE'X, CSTM, MPT, DIT, EQDYN, SILD, .. BGPDT, TOL, QP, UPV, EST, XYCDB, PPT/OPP1, OQP1, OUPV1, OES1, OEF1, PUGV/C, N, TRANRESP \$ SDR2 187

OPP1.00P1,0UPV1,0ES1,0EF1,/OPP2,0QP2,0UPV2,0ES2,0EF2, SDR3

OPP2.0QP2,0UPV2,0ES2,0EF2 CHKPNT 189

OPP2.00P2,0UPV2,0EF2,0ES2,//V.N.CARDNO 0FP

SAVE

191 192

190

P2.JUMPPLOT COND PLTPAR.GPSETS.ELSETS.CASEXX.BGPDT.EGEXIN.SIL., PUGV.GPECT.OES1/ PLOTX2/v.n.NSIL/V.n.LUSET/V.n.JUMPPLOT/V.n.PLTFLG/V.n.PFILE \$ PLOT

PFILE \$ SAVE

194

193

PLOT 12// PRTMSG 195

LABEL 196 XYCDB,OPP2.0QP2,OUPV2,OES2,OEF2/XYPLTT/C,N,TRAN/C,N,PSET/~,N, PFILE/V.N,CARDNO \$ XYTRAN 197

PFILE, CARDNO

SAVE

XYPLTT// \$ XYPLOT 199

FINIS, REPEATT COND 201

LBL18 \$

LABEL

200

LBL13,100 \$ REPT 202

ERROR2 \$ JUMP 203

FINIS \$ UCMP 204

ERRORZ \$ LABEL 205

//C.N.-2/C.N.DIRTRD PRTPARM 206

ERROR1 \$ LABEL 207 //C.N.-1/C.N.DIRTRD PRIPARM

ERROR3 \$ LABEL //C.N.-3/C.N.DIRTRD \$ PRTPARM 210

NASTRAN CJURSE - - - DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING 5/8-INCH DIAMETEP STEEL BEAM

FINIS \$ 211 LABEL

212 END

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

PAGE

NASTRAN COURSE - - - DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETER STEEL BEAM CONTINUATION OF CHECKPOINT DICTIONARY

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REEL =	NUMBER REEL =
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÷	FILE EC	EOEXIN	CONTAI	J	, -	ΔU	BLOCK -	CONTAINS	1022	WORDS.
Ŋ,	2090		F.465 = 0	REEL	. "		,			
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r	FILE B	BGFOT	CONTAINS	- u	- ،	, -	BLOCK S	CONTAINS	1022	WORDS.
:	FILE ST	٠	CONTAI	אנור		1 :		CONTAINS	1022	WORDS.
80	× v v v		FLASS = 0,	REEL	ш	. 1.			1)
6			11	REEL	п	0, FILE =	0			
	C	STM	TATAG		0	1K S-1	BLOCK	CONTAINS	1022	WORDS.
•		•	FLA35 = 0.	REEL	0	H.				
		USET	CATAL		0	· ^ ·	BLOCK	CONTAINS	1022	WORDS.
:			FLAGS = 0.	KEEL	" (D. FILE =	0 3		•	000
,				u	٠,	n	2,0	214 200	770	
	FILE GO	٠.	DATAIL	J	0		BLOCK	CONTAINS	1022	WORDS.
13.			FLAGS = 0,	REEL	11	: ILE =	0			
	FILE KAA	44	CONTAI		0	KS EACH	BLOCK	CONTAINS	1022	WORDS.
14.		•	FLAGS = 0,	REFI	11	: ILE =	0			
	FILE BA	44			0	BLOCKSEACH	BLOCK	CONTAINS	1022	WORDS.
15,		•	FLAGS = 0.	REEL	,, (0, FILE =	0	•		
,	FILE MAA	4	CONTAINS	L	၁	BLUCKSEACH	31.00	CONTAINS	1022	WORDS.
16,			FLAGS = 0.	REF	, (0 2	•	0	, ,
		X 4 A A		ū	۰,	٠,	STOCK STOCK	CONTAINS	1022	WORDS.
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ā		_	E A GA - A L NG	7 7 7 7	٠,	(L	3	Z 1	770	. 60 40 4
2	FILE KF	Ş	-	1	0	JCKS-	BLOC	CONTAINS	1022	WORDS.
19,		•	FLAGS = 0,	REEL	н		. >			
	O	a .	_		0	S)	BLOCK	CONTAINS	1022	WORDS.
20.			FLAGS = 0,	REEL	п	1	0			
;	33 H T L	S٦	CONTAINS O = SOA I	u u	٥ ,	15EA	BLOCK	CONTAINS	1022	WORDS.
•	FILE EC.			ı	0	LCCKS-	BLOCK	CONTAINS	1022	WORDS.
22,	PLTSETX	•	FLAGS = 0,	REEL	n	: 311 ₌				•
	FILE PLTS	TSETX	CONTAI		0	LOCKSEACH	BLOCK	CONTAINS	1022	WORDS.
23,	7447 JU	•	FLAGS = 0,	REEL	"	FILE			0	((()
Š		- 4 4	200	ū	۰,	Λ Σ	מוני מוני	CONININA	1022	. NO X O X
, ,	מייים מייות	SETS	F COOL	j	, 0	DCKSEA	BLOCK	CONTAINS	1022	WORDS.
25.	ELSETS		FLAGS	REEL	, ,,	- 1 L	0			
	FILE EL	SETS	CONT		0	BLCCKSEACH	BLOCK	CONTAINS	1022	WORDS.
26,	REENTER	¥	DMAP SEQUENCE	NUMBER	Ω	0.				
27,) }	٠	FLAGS = 0.	REEL	u	11 (1) 11 (1)	12			
ć	FILE EC	C	CONTAINS	ŭ	- ,	EACH	BLCCK	CONTAINS	1022	WORDS.
28,	X V V	•	FLAGS = C.	א הי ר	Ħ	H	2			

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4	,5 0 BLOCK	BLOCK	Ę	BLOCK	BLOCK	80	BLOCK	BLOCK	BLOCK	BLOCK	BLOCK	BLOCK	0 BLDCK
24 1, FILE =	20 FILE FILE JOKS-LEA	C. FILE = BLOCKSEACH	30 1 FI F	BLOCKSEACH	1. FILE = BLOCKSEACH	1. FILE = 0. FILE =	JCKSEA	S	0, FILE = BLOCKSEACH	O. FILE = BLOCKSEACH	0, FILE = BLOCKSEACH	0, FILE = BLOCKSEACH	O, FILE = BLOCKSEACH
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REENTER AT	XVPS XVPS Y. SLT FILE SLT	FILE GPTT	REENTER AT	FILE EST	FILE GPECT	XVPS .	FILE GET	FILE KAGG	GPST FILE GPST	MGG . FILE MGG	BGG . FILE BGG	KGGK FILE KGGX	OGPST FILE OGPST

35. 37. 38. 39. 41,

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29,

31. 32. 33.

NASTRAN COURSE - - - DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETER STEEL BEAM

ADDITIONS TO CHECAPOINT DICTIONARY

	34 STARTING WITH ID	
46, K4NN , FLAGS = 0, REEL = 0, FILE = 0 FILE KAFF , FLAGS = 0, REEL = 0, FILE = 0 FILE KAFF , FLAGS = 0, REEL = 0, FILE = 0 FILE KAFF , CONTAINS	* SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE	52, REENTER AT DWAP SEQUENCE NUMBER 38 100 KELL = 19
	:	

73, XVPS , FLAGS = 0, REEL = 1, FILE = 31

*** USER INFORMATION MESSAGE 2119, SUBROUTINE GP4PRT - DIAG 22 SET DISP SETS VS. DOF FOLLOWS.

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	- 8 - 2 - 4 - 2 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5
	7 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -
	SPC DISPLACEMENT SET -5- 1-5 4-5 8-3 8-4 11-4 11-5 11-5 11-5 11-5 21-4 21-5 21-4
	25- 1-5- 1-5- 11-4- 18-3- 18-3- 18-3- 21-4-
	14 - 4 4 - 4 4 - 4 7 - 7 11 - 3 14 - 4 2 - 7 2 - 7
	13- 1-3 4-3 7-4 10-5 14-3 17-4
STEEL BEAM	1-2 1-2 3-5 7-3 10-4 13-5 17-3 20-4
5/8-INCH DIAMETER STEEL	1 1 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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FEBRUARY		<u></u>	-7-	4-1	7-2	10-6	14-1	17-2	20-6
		ACEMENT SE	-9-	3-6		10-2	13-6	17-1	20-2
		ANALYSIS DISPLACEMENT SET	-5-	3-2	9-9	10-1	13-2	16-6	20-1
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		-6-	3-5 7-3 10-4 13-5 20-4
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<u>.</u>	CEMENT SET	-9-	2-2-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6
	PERM SPC DISPLACEMENT SET	٠ ن ن	22 0 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1
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	BORY SPC DISPLACEMENT SET	-9-	
	Y SPC DISPL	-5-	
	a CB	-4-	
		-3-	1-6
5/8-INCH DIAMETER STEEL BEAM		-2-	1-2
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ADDITIONS TO CHECKPOINT DICTIONARY

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73 BLCCKSEACH 1, FILE = 0. FILE = BLCCKSEACH 0. FILE = 9.0CKSEACH 0. FILE = 9.0CKSEACH	1. FILE = BLOCKSEACH 1. FILE = BLOCKSEACH 1. FILE = FILE = FILE = FILE =	90 FILE = 0. FILE = BLUCKSEACH	93 BLOCKSEACH 1. FILE = BLOCKSEACH 1. FILE = FLOCKSEACH 1. FILE =	1, FILE = BLCCKSEACH 1, FILE = BLCCKSEACH 1, FILE = BLCCKSEACH 1, FILE = BLCCKSEACH 1, FILE = ACH 1, FILE = ACH	119 FILE = BLOCKSEACH 1, FILE = BLOCKSEACH 1, FILE =
NUMBER REEL : O REEL	NUUMBER REEL = 0 REEL = 0	NUMBER REEL = REEL =		NUMBER REEL = 0	NUGGER REEL = REEL = REL = 1
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REEVIER AT USET YELE USET XVPS GMD FILE GMD RG FILE GMD FILE GGD FILE RG GGD FILE GGD FILE GGD	REENTER AT KNN FILE KNN MGG FILE MGG MNN FILE MGK KNN FILE MKK KVPS	REENTER AT XVPS KFF FILE KFF	REENTER AT KES , FILE KFS , KFF , FILE KFF , MFF , MFF , XVPS , X	REENTER AT FILE KFF KAA MFFE MFFE MFFE MFF FILE MFF XVPS	REENTER AT USETD
74. 75. 76. 77. 78.	80. 82. 83.	85. 86. 87.	99 9 6 69 69 69 69 69 69 69 69 69 69 69	93, 95, 96,	999. 100. 101.

WORDS.	6	WORDS.	WORDS.		WORDS.			WORDS.		WORDS.		WORDS.				WORDS.		WORDS.
1022	6	1022	1022		1022			1022		1022		1022				1022		1022
CONTAINS		CONTAINS	CONTAINS		CONTAINS			CONTAINS		CONTAINS		CONTAINS				CONTAINS		CONTAINS
BLOCK	44	BLOCK 45	BLOCK	76	BLOCK	47	0	BLOCK	0	BLOCK	0	BLOCK		48	0	BLOCK	0	BLOCK
1 BLOCKSEACH	REEL = 1, FILE = 44	1 BLOCKSEACH REEL = 1, FILE =		REEL = 1, FILE =	1 BLOCKSEACH BLOCK CONTAINS 1022 WORDS.	REEL = 1, FILE =	REEL = 0, FILE =	O BLOCKSEACH BLOCK CONTAINS 1022	REEL = 0, FILE =	0 BLOCKSEACH BLOCK CONTAINS 1022 WORDS	REEL = 0, FILE =	0 BLOCKSEACH BLOCK CONTAINS 1022 WORDS.	NUMBER 128	REEL = 1, FILE =	REEL = 0, FILE =	0 BLOCKSEACH BLOCK CONTAINS 1022 WORDS.	REEL = 0, FILE =	0 BLOCKSEACH BLOCK CONTAINS 1022 WORDS.
CONTAINS	FLAGS = 0.	FLAGS = 0.	CONTAINS	FLA35 = 0.	CONTAINS	FLA35 = 0,	FLA35 = 0,	CONTAINS	FLAGS = 0,	CONTAINS	FLAGS = 0,	CONTAINS	REENTER AT DMAP SEQUENCE NUMBER	FLAGS = 0,	FLAGS = 0.	CONTAINS	FLAGS = 0.	CONTAINS
FILE DLT	TRL Tring to:	FILE TRL	FILE SILD	GPLD .	FILE GPLD	XVPS .	TFPOOL .	FILE TFPOOL	NLFT .	FILE NLFT	PNLD .	FILE PNLD	REENTER AT	XVPS .	ABFL ,	FILE ABFL	KBFL .	FILE KBFL
	103,	104.		105,		106.	107,		108,		109,		110.	111.	112,		113.	•

114, REENTER AT DMAP SEQUENCE NUMBER 144

5/8-INCH DIAMETER STEEL BEAM

NASTRAN COURSE - - DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

ADDITIONS TO CHECKPOINT DICTIONARY

	TIME2 TIME3	TIME2 TIME3
	TIME1	TIME1
	P1 P2 P3	P1 P2 P3 1 1 0
REEL = 1, FILE = 38 REEL = 1, FILE = 37 REEL = 1, FILE = 37 REEL = 1, FILE = 49 REEL = 1, FILE = 49 REEL = 0, FILE = 0 BLCKSEACH BLOCK CONTAINS 1022 WORDS. REEL = 0, FILE = 0 BLCKSEACH BLOCK CONTAINS 1022 WORDS. REEL = 0, FILE = 0 BLCKSEACH BLOCK CONTAINS 1022 WORDS. REEL = 0, FILE = 0 BLCKSEACH BLOCK CONTAINS 1022 WORDS. REEL = 0, FILE = 0 BLCKSEACH BLOCK CONTAINS 1022 WORDS. REEL = 0, FILE = 0 BLCKSEACH BLOCK CONTAINS 1022 WORDS. REEL = 0, FILE = 0 BLCKSEACH BLOCK CONTAINS 1022 WORDS. REEL = 1, FILE = 50 BLCKSEACH BLOCK CONTAINS 1022 WORDS. NUMBER 159 REEL = 1, FILE = 50 REEL = 1, FILE = 50 REEL = 1, FILE = 51 REEL = 1, FILE = 52 REEL = 1, FILE = 51 REEL = 1, FILE = 52 REEL = 1, FILE = 52	B MATRIX ROWS COLS TERMS DENS) T CORE F 307 1 47 3.0851 0 13549. METHOD 1 NT,NBR PASSES = 1.EST. TIME MPTRIX PRODUCT	9 MATRIX ROWS COLS TERMS DENS) T CORE P1 307 1 47 3 .0851 0 13615. 1 METHOD 1 NT,NBR PASSES = 1.EST. TIME =
FLAGS = 4, CONTAINS FLAGS = 4, FLAGS = 0, FLAGS = 0, CONTAINS	TERMS DENS)*((TERMS DENS)*(6
115. MDD 116. KDD 117. XVP5 118. K2PP 119. K2PP 119. K2PP 120. B2PP 120. B2PP 121. K2DD 122. FILE B2PP 121. K2DD 122. FILE B2PP 122. FILE B2PD 123. B2DD 124. REENTER AT B 125. AVPS 126. BDD 127. REENTER AT B 127. REENTER AT B 128. KAPS 129. XVPS 129. XVPS	(A MATRIX ROWS COLS 1 301 126 1	(A MATRIX RONS COLS 1 304 60 t

TIME2 TIME3

TIME1

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DENS)*(B MATRIX ROWS COLS TERMS DENS) T .0166 306 1 182 15 .0879 0 METHOD 1 NT,NBR PASSES = 1.E

TERMS 1

(A MATRIX ROWS COLS 304 60 1

130, 132, 133, 134,

| SEEL = 1, FILE = 53 | SEEL = 1, FILE = 54 | SEEL = 1, FILE = 54 | SEEL = 1, FILE = 54 | SEEL = 1, FILE = 55 | SEEL = 1, FILE = 55

REENTER AT DWAP SEQUENCE NUMBER
PPT , FLAGS = 0, REEL = 1
FILE PPT CONTAINS 18
PST , FLAGS = 0, REEL = 1
FILE PDT , FLAGS = 0, REEL = 1
FILE PDT , FLAGS = 0, REEL = 1
FILE PDT , FLAGS = 0, REEL = 1
FILE PD , FLAGS = 0, REEL = 1
FILE PD , CONTAINS 18

FILE POT PD

IS 1022 WDRDS.				IS 1022 WORDS.	
57 LOCY CONTAIN	58		59	LOCK CONTAIN	09
FLAGS = 0, REEL = 1, FILE = 57 CONTAINS 1022 WORDS.	FLAGS = 0, REEL = 1, FILE = 58	AT DWAP SEQUENCE NUMBER 165	1, FILE =	BLOCKSEACH B	1, FILE =
REEL = 1	REEL =	NUMBER	REEL =	-	REEL =
FLAGS = 0. CONTAINS	FLAGS = 0.	DWAP SEQUENCE	FLAGS = 0,	CONTAINS	FLAGS = 0,
TOL FILE TOL	xvps.	REENTER AT	PDT ,	FILE PDT	, SAVX
135,	136,	137.	138,		139,

***USER INFORMATION MESSAGE 3023—PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCRATCH2 (N = 60) TIME ESTIMATE = 1				TIME3
SSAGE 3023PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCRATCH2 (N = 6 STIMATE	AVG .			
SSAGE 3023PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCRATCH2 (N = 6 STIMATE	S REFACE LC			TIME2
***USER INFORMATION MESSAGE 3023—PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCRATCH2 (N = TIME ESTIMATE = 1 C AVG = 4 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE = -15639	Ψ			TIME1
***USER INFORMATION MESSAGE 3023—PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCRATCH TIME ESTIMATE	2 (N = OUPS = OUPS =			e 6
***USER INFORMATION MESSAGE 3023PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCR TIME ESTIMATE: 1 C AVG = 4 PC AVG = 0 SPIL ADDITIONAL CORE: -15639 C VAX = 5 PCMAX = 0 PC AVG = 0 PP C AVG = 0 PC AVG	A T C H			Z
***USER INFORMATION MESSAGE 3023PARAWETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK TIME ESTIMATE	SPIL P			
***USER INFORMATION MESSAGE 3023PARAWETERS FOR SYMMETRIC DECOMPOSITION OF DAT TIME ESTIMATE	A BLOCK	WORDS.	WORDS.	CORE 29681. ST. TIN
***USER INFORMATION MESSAGE 3023PARAWETERS FOR SYMMETRIC DECOMPOSITION OF TIME ESTIMATE: 140, REENTER AT DMAP SEQUENCE NUMBER 168 141, UDVT , FLAGS = 0, REEL = 1, FILE = 61 141, UDVT , FLAGS = 0, REEL = 1, FILE = 62 142, XVPS , FLAGS = 0, REEL = 1, FILE = 62 144, XVPS , FLAGS = 0, REEL = 1, FILE = 63 144, XVPS , FLAGS = 0, REEL = 1, FILE = 63 144, XVPS , FLAGS = 0, REEL = 0, FILE = 63 145, ODV1 , FLAGS = 0, REEL = 0, FILE = 63 146, OPNL1 , FLAGS = 0, REEL = 0, FILE = 0 146, OPNL1 , FLAGS = 0, REEL = 0, FILE = 0 146, OPNL1 , CONTAINS	DA = =	022	022	F
***USER INFORMATION WESSAGE 3023PARAMETERS FOR SYMMETRIC DECOMPOSI ***USER INFORMATION WESSAGE 3023PARAMETERS FOR SYMMETRIC DECOMPOSI ***USER INFORMATER AT DMAP SEQUENCE NUMBER 168 140, REENTER AT DMAP SEQUENCE NUMBER 168 141, UDVT	TION OF PC AVG PCMAX	TAINS 1	TAINS 1	DENS) .6521 SES =
***USER INFORMATION MESSAGE 3023PARAMETERS FOR SYMMETRIC DECOM ***USER INFORMATION MESSAGE 3023PARAMETERS FOR SYMMETRIC DECOM ***USER INFORMATION MESSAGE 1	POSI	S O S	CON	ମଣ 799 . PAS
***USER INFORMATION MESSAGE 3023—PARAMETERS FOR SYMMETRIC E TIME ESTIMATE	DECOM	61 3LDCK 62	63 3LOCK 3LOCK	TER NSA
***USER INFORMATION MESSAGE 3023PARAMETERS FOR SYMMET TIME ESTIMATE	O I A	# PCH	ACH E	0LS 46 1 T
***USER INFORMATION MESSAGE 3023PARAMETERS FOR SY TIME ESTIMATE	MMET G = X =	E () E	F11.E S1.E F1.E	IS C
***USER INFORMATION MESSAGE 3023PARAMETERS FOR TIME ESTIMATE = 1 140, REENTER AT DMAP SEQUENCE NUMBER 141, UDVT , FLAGS = 0, REEL = 1 142, XVPS , FLAGS = 0, REEL = 1 144, XVPS , FLAGS = 0, REEL = 1 144, XVPS , FLAGS = 0, REEL = 1 145, GUDVT , FLAGS = 0, REEL = 1 145, GUDVT , FLAGS = 0, REEL = 1 145, GUDVT , FLAGS = 0, REEL = 1 145, GUDVT , FLAGS = 0, REEL = 1 145, GUDVT , CONTAINS , GRENTING , FLAGS = 0, REEL = 1 145, GOPNLT , FLAGS = 0, REEL = 0 1 145, GOPNLT , FLAGS = 0, REEL = 0 1 145, GOPNLT , FLAGS = 0, REEL = 0 1 145, GOPNLT , FLAGS = 0, REEL = 0 1 145, GOPNLT , FLAGS = 0, REEL = 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	% C C A V S A S A S A S A S A S A S A S A S A S A	168 3LOCA	171 171 3LOCK 3LOCK	RO'N BME
***USER INFORMATION MESSAGE 3023PARAMETE TIME ESTIMATE	RS FG	α		ATR17 03
***USER INFORMATION MESSAGE 3023PARA TIME ESTIMATE = 1 ADDITIONAL CORE = -15639 140, REENTER AT DMAP SEQUENCE 141, UDYT , FLAGS = 0, FILE UDVT CONTAINS 142, XVPS , FLAGS = 0, 144, XVPS , FLAGS = 0, 144, XVPS , FLAGS = 0, 145, UDVY , FLAGS = 0, 145, UDVY , FLAGS = 0, FILE OUDVT CONTAINS 146, OPNL1 , FLAGS = 0, FILE OPNL1 , CONTAINS FILE OPNL1 , CONTAINS FILE OPNL1 , FLAGS = 0, FILE OPNL1 , FLAGS = 0, FILE OPNL1 , FLAGS = 0, FILE OPNL1 CONTAINS 109 60 66 5 .0012	IMETE	NUMB REEL REEL	NUMB REEL REEL REEL	B
***USER INFORMATION MESSAGE 3023- TIME ESTIMATE = ADDITIONAL CORE = -1 140, REENTER AT DMAP SEQUIAL: 141, UDVT , FLAGS = FILE UDVT , FLAGS = 143, XVPS , FLAGS = 144, XVPS , FLAGS = 145, QUDVT , FLAGS = FILE QUDVT , FLAGS = FILE QPNL1 , CONTAIL CONTAIL , GONTAIL	-PAR.	ENCE NS O.	E S S S S S S S S S S S S S S S S S S S	ENS),
***USER INFORMATION MESSAGE 3 TIME ESTIMATE ADDITIONAL CORE 140, REENTER AT DMAP 141, UDVT , FLAG FILE UDVT , FLAG 143, REENTER AT DMAP 144, XVPS , FLAG 145, GUDV1 , FLAG FILE OUDV1 , FLAG FILE OUDV1 , CG 146, OPNL1 , CG 146, OPNL1 , CG 146, OPNL1 , CG 147, XVPS , FLAG FILE OUDV1 , CG 148, OPNL1 , CG 149, OPNL1 , CG 149, OPNL1 , CG	023-	SEQUINTAI	SEQU SEQU SEQU SEQU SE = SEQU	00
***USER INFORMATION MESS. TIME EST ADDITIONAL 140, REENTER AT (141, UDVT FILE UDVT 142, XVPS 143, REENTER AT (144, XVPS 145, FILE OUDVT 146, OPNL1 FILE OPNL1 FILE OPNL1 FILE OPNL1 FILE OPNL1 FILE OPNL1 FILE OPNL1	AGE 3 IMATE CORE	DWAP FLAG CO	OMAP FLAG FLAG FLAG	ERMS 5
***USER INFORMATION TIME ADDITI 140, REENTER 141, UDVI FILE UD 142, XVPS 144, XVPS 144, AVPS 145, FILE OU 146, PPLLE OU	MESS EST ONAL	4 ·⊢>	AT () VC1	
***USER INFORMATE 140, REE 141, UDV 141, UDV 142, XVP 144, XVP 145, GUP 145, FIL 146, OPN 146, OPN 146, OPN 146, OPN	TIME	A THE SECTION OF THE	NATER NATER NOTE 111	99 0018
***USER INF 140, 141, 144, 146, 146, 146,	JRM∴T AD	RECOV FIL	X X V P C C C C C C C C C C C C C C C C C C	0MS
***USER (A MATR 111111111111111111111111111111111111	I N E	40.	4 4 4 3 . 6 5	IX R(
	***USER			(A MATR 109

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NUMBER REEL =

147.

REENTER AT DWAP SEQUENCE NU UP., FLAGS = 0, RE FILE UPV CONTAINS QP CONTAINS XVPS , FLAGS = 0, RE XVPS , FLAGS = 0, RE

FILE OP XVPS

150,

149,

REEL = 1, FILE = 64
12 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
REEL = 1, FILE = 65
1 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS.
REEL = 1, FILE = 66

REEL = 1, FILE = 67

REEL = 1, FILE = 68

REEL = 1, FILE = 68

REEL = 1, FILE = 69

REEL = 1, FILE = 69

REEL = 1, FILE = 70

REEL = 1, FILE = 71

REEL = 1, FILE = 70 190 NUMBER FLASS = 0, R
CONTAINS
FLASS = 0, R
FLASS = 0, R OPP2 FILE OPP2 GOP2 CUPV2 FILE OUPV2 FILE OEF2 REENTER AT 151. 152. 153, 154,

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5/8-19CH DIAMETER STEEL BEAM

ADDITIONS TO CHECKPOINT DICTIONARY

REEL = 0, FILE = 0 0 BLOCKS--EACH BLOCK CONTAINS 1022 WORDS. DES2 , FLAGS = 0, FILE DES2 CONTAINS 157,

FEBRUARY 9, 1981 NASTRAN 12/15/80

NASTRAN COURSE - - - DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

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NASTRAN COURSE - - - DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

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Controller	.50000005-0	IJ	•	.644941E-0	.0	•	.037792E+0
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5 8-INCH DIAMETER STEEL BEAM POINT-10 = 7

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NASTRAN COURSE - - - DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

5 8-14CH DIAMETER STEEL BEAM POINT-ID = 21

	R3	•	.0273285-0	.368902E-0	.026862E-0	.7693705-0	.906891E-0	.079124E-0	.538504E-0	.465900E-0	.5a5195E-0	.594291E-0	.6183915-0	.62188E-0	.454282E-0	.799278E-0	.4935435-0	.830940E-0	.7848415-0	.541602E-0	.1753965-0	.4256245-0	.097459E-0	.403882E-0	. US2450E-0	.9843535-0	.861896E-0	.5:98465-0	. 5666175-0	.294487E-0	.724754E-0	3.5027215-03	.3437265-0	.2575-85-0	.5611055-0	.1157945-0	.4870405-0	.671285E-0	.537953E-0	.051669E-0	.5290:7E-0	.0958396-0	.3304655-0	.521520E-0	.981831E-0	.255384E-0	.073634E-0
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NASTRAN COURSE ~ - ~ DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

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FEBRUARY 9, 1981 NASTRAN 12/15/80

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NASTRAN COURSE - - DEMO. PROB. 9 DIRECT TRANSIENT ANALYSIS

5/8-INCH DIAMETER STEEL BEAM

SUMMARY XY-OUTPUT

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PAGE

NASTRAN 12/15/80

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SUBCASE RESPONSE DISPLACEMENT

CURVE

21(4)

THIS CURVE WILL BE PAPER-PLOTTED FRAME

CURVE TITLE = X-AXIS TITLE = Y-AXIS TITLE =

THE FOLLOWING INFORMATION IS FOR THE ABOVE DEFINED CURVE ONLY.

WITHIN THE FRAME X-LIMITS

2.250000E-01) 70 X = (x = 0.

THE SMALLEST Y-VALUE = -1.894862E-03 AT X = 1.000000E-02

3.313758E-01 AT X = 1.650000E-01 THE LARGEST Y-VALUE =

o. WITHIN THE X-LIMITS OF ALL DATA (X =

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1.000000E-02 -1.894862E-03 AT X = THE SMALLEST Y-VALUE =

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SUMMARY U L 2 2 W

NASTRAN COURSE - - - DEMO. PROB. 9
DIRECT TRANSLENT ANALYSIS

PAGE FEBRUARY 9, 1981 NASTRAN 12/15/80

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5/8-INCH DIAMETER STEEL BEAM

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NASTRAN CONFIG=6, FILES=(NPTP, OPTP, PLT2)

FEBRUARY 10, 1981 NASTRAN 0/0/0

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RIGID FORMAT SERIES P

CDC 6000 SERIES 6400 / 6500

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NASTRAN COURSE - - - DEMO, PROB. 9A DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

RESTART FROM DEMO. PROS 9 TO CONTINUE INTEGRATION FROM T=100

A DUMMY NONLINEAR LOAD (HAVING A VERY SMALL SCALE FACTOR) IS APPLIED TO THE STRUCTURE IN ORDER TO AVOID TEMPORARILY A PROGRAM BUG WHICH STGPS EXECUTION IF THE DLOAD SPECIFIED IS ZERG FOR THE DURATION OF THIS RUN. A CODE FIX IS AVAILABLE. TITLE=NASTRAN COURSE - - - DEMO. PROB. 9A SUBTITLE=DIRECT TRANSTENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM LABEL=RESTART FRCM DEWO. PROB 9 TO CONTINUE INTEGRATION FROM T=100 S A NEW TSTEP CARD IS SELECTED. TSTEP=77 XY PLOT ON LINE PRINTER GUIPUT(XYPLOT) XYPAPLOT DISP RESPONSE/21(12) BEGIN BULK NONLINEAR = 44 SET 25 = 7,13,21 DISP=25 ECHO-BOTH Didab=92 CARD

NASTRAN COURSE - - - DEMO. PROB. 9A DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

FEBRUARY 10, 1981 NASTRAN 12/15/80 PAGE

9

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

INPUT BULK DATA DECK ECHD : 15TEP 77 2 ... 3 ... 4 ... 5 ... 6 ... 7 ... 8 ... 9 ... NOLINZ 44 16 2 1.-40 5 2 10 2

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TOTAL COUNT=

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

NASTRAN COURSE DIRECT TRANSIE

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NASTRAN COURSE --- DEMO. PROB. 9A DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

FEBRUARY 10, 1981 NASTRAN 12/15/80

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RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

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NASTRAN COURSE - - - DEMO. PROB. 9A DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

LIST OF MODIFIED CARDS

MASK WORD - BIT POSITION - CARD NAME - PACKED BIT POSITION
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RESTART FRCM DEMG. PROB 9 TO CONTINUE INTEGRATION FROM T=100 NASTRAN COURSE - - - DEMO. PROS. 9A DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

*INDICATES INSTRUCTIONS TO BE EXECUTED FOR MODIFIED RESTART

THE FOLLOWING FILES WERE USED FROM OLD PROBLEM TAPE TO INITIATE RESTART

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^{**}NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM**

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***USER INFORMATION MESSAGE 3023PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK SCRATCH2 (N =	TIME ESTIMATES 1 C A	ADDITIONAL CORE= -15639 C M
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METHOD 1 I , NBR PASSES = 1, EST. TIME =

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NASTRAN COURSE - - - DEMO. PROB. 9A DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

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NASTRAN COURSE - - - DEMO. PROB. 9A DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIRMETER STEEL BEAM

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NASTRAN COURSE - - - DEMO, PROB. 9A DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

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NASTRAN COURSE - - - DEMO. PROB. 9A DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM TATOO

SUMMARY T U d L U O - Y X

SUBCASE RESPONSE DISPLACEMENT

CURVE

21(4)

THIS CURVE WILL BE PAPER-PLOTTED FRAME

CURVE TITLE = X-AXIS TITLE = Y-AXIS TITLE =

THE FOLLOWING INFORMATION IS FOR THE ABOVE DEFINED CURVE ONLY.

(x = 1.000000E-01 T0 x = 2.125000E-01)WITHIN THE FRAME X-LIMITS

2.125000E-01 2.261203E-01 AT X = THE SMALLEST Y-VALUE = 1.625000E-01 3.313882E-01 AT X = THE LARGEST Y-VALUE =

WITHIN THE X-LIMITS OF ALL DATA (X = 1.000000E-01 TO X = 2.125000E-01)

2.125000E-01 2.261208E-01 AT X = THE SMALLEST Y-VALUE = 1.625000E-01 3.313882E-01 AT X = THE LARGEST Y-VALUE =

SUMMARY O IT О 2 Ш

NASTRAN COURSE - - - DEMO. PROB. 91 DIRECT TRANSIENT ANALYSIS OF 5/8-INCH DIAMETER STEEL BEAM

FEBRUARY 10, 1981 NASTRAN 12/15/80

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RESTART FROM DEMO. PROB 9 TO CONTINUE INTEGRATION FROM T=100

X-AXIS TITLE =

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MASTRAN COURSE - - DEMO, PROB. 10 MODAL COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. GIV(REAL), INV(COMPLEX)

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*** USER INFORMATION MESSAGE 207, BULK DATA NOT SURTED, XSORT WILL RE-ORDER DECK.

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CANTILEVER BEAM WITH VISCOUS DAMPING. GIV(REAL), INV(COMPLEX)

NASTRAN COURSE - - DEMO, PROB. 10 MODAL COMPLEA EIGENVALUE ANALYSIS

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NASTRAN COURSE - - - DEMO. PROB. 10 MODAL COMPLEX EIGENVALUE ANALYSIS

GIV(REAL), INV(COMPLEX) CANTILEVER BEAM WITH VISCOUS DAMPING.

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NASTRAN 8/15/79

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S AVG PREFACE LOOPS 9 IS 6 SECONDS. 40, SPILL WILL GCCUR FOR THIS CORE AT A PROBLEM SIZE 000 || |Z SPILL GROUPS = 0 PC GROUPS = ***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYWNETRIC DECOMPOSITION OF DATA BLOCK MAA TIME ESTIMATE= 1 C AVG = 1 PC AVG = 0 SPILL ADDITIONAL CORE= -23739 C NAX = 1 PCMAX = 0 PC 1.EST. TIME = 1.EST. METHOD 2 NINDR PASSES = METHOD 2 T.NBR PASSES = METHOD 1 NINBR PASSES = METHOD 1 NINBR PASSES = METHOD 3 T.NBR PASSES =

NASTRAN COURSE - - - DEMO. PROB. (O MODA. COMPLEX EIGENVALUE ANALYSIS

CANTILEVER BEAM WITH VISCOUS DAMPING. GIVERAL), INVICONDLEX!

EIGENVALUE ANALYSIS SUMMARY (GIVENSMETHOD)

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NUMBER OF EIGENVALUES EXTRACTED	NUMBER OF EIGENVECTORS COMPUTED	NUMBER OF EIGENVALUE CONVERGENCE FAILURES	NUMBER OF EIGENVECTOR CONVERGENCE FAILURES	REASON FOR TERMINATION,	LARGEST OFF-DIAGGNAL MODAL MASS TERM	WODE PAIR.		NUMBER OF OFF-DIAGONAL MODAL MASS TERMS FAILING CRITERION

NASTRAN COURSE - - - DEMO. PROB. 10 MODAL COMPLEX EIGENVALUE ANALYSIS

NASTRAN 8/15/79 3, 1980 JANUARY

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GIV(REAL), INV(COMPLEX) CANTILEVER BEAM WITH VISCOUS DAMPING.

GENERALIZED STIFFNESS	.941951E-	.742495E	.180959E+0	.583633E+0	.432931E+0	.713022E+0	.193199E	.311128E+0	.266050E+0	.647863E+0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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*** USER INFORMATION MESSAGE 3028,

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NASTRAN COURSE - - DEMO, PROB, 10 NODAL COTPLEX EIGENVALUE ANALYSIS

JANUARY 3, 1980 NASTRAN 8/15/79

PAGE

CANTILEZER BEAM WITH VISCOUS DAMPING. CIV(REAL). INV(COMPLEX)

(INVERSE POWER METHOD) SUMMARY ANALYSIS EIGENVALUE COMPLEX

ო	ო	0	ហ	55	
NUTBER OF EIGENVALUES EXTRACTED	NUWBER OF STARTING POINTS USED	NOVBER OF STARTING POINT OR SHIFT POINT MOVES	TOTAL NUTBER OF TRIANGULAR DECOMPOSITIONS	TOTAL NUMBER OF VECTOR ITERATIONS	

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REASON FOR TERMINATION . . .

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GIVEREAL). INV(COMPLEX) NASTRAN COURSE - - - 0840, PROB. 10 MODAL COTPLEX EIGENVALUE ANALYSIS CANTILEVER BEAM WITH VISCOUS DAMPING. SUMMARY u D VPLEX EIGENVAL O

FREQUENCY 1.622675E+00 1.083140E+01 3.074157E+01 (IMAG) 1.019557E+01 6.805570E+01 1.931550E+02 FIGENVALUE -4,887501E+C0 -7,700564E+C0 -4,742437E+00 4 00 EXTRACTION GROER - 01 00

DAMPING COEFFICIENT 9.587109E-01 2.263000E-01 4.910499E-02

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CANTILEVER B	E 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	CANTILEVER BEAM WITH VISCOUS DAMPING.	GIVEREAL), INV(COMPLEX)	NV(COMPLEX)				
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<u></u>	ڻ ن		4.8⊻31&5E=01 357.85§6	0.0	0.0	0.0	1.242317E-02 2.1058	
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ഹ	O	0.0	2.9%7075E-01 185.3994	0.0	0.0	0.0	2.31490?E-02 184.94§8	
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თ	IJ	0.0	6.845895E-01 184.7641	0.0	0.0	0.0	1.057729E-02 183,4477	
Ξ	IJ	0.0	7.204565E-01 184.8357	0.0	0.0	0.0	3.960370E-03 354.8744	
13	U	0.0	6.024422E-01 188.6053	0.0	0.0	0.0	1,996430E-02 355,4129	
15	G	0.0	3.398007E-01 196.0411	0.0	0.0	0.0	3.401064E-02 354.6151	
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NASTRAN COURSE DEMO. MODAL COMPLEX EIGENVALUE ANA	CANTILEVER BEAM WITH VISCOUS COMPLEX EIGENVALUE = -4.742	POINT ID.	-	m	ហ	۲	ത	-	<u>.</u>	15	1.7	19	5

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CANTILEVER BENM ALTH SINUSDIDAL LOAD - - - INJERSE POWER METHOD

CASE CONTROL DECK ECHO

CASE CONTROL DECK ECHO

TITLE:NASTRAN COURSE — — DEMO. PROB. 11

SUBSTITLE=MODAL FREQUENCY RESPONSE ANALYSIS

LABEL=CANTILEVER BEAM WITH SINUSOIDAL LOAD — — INVERSE POWER METHOD

SCE 11

SCE 11

SCE 12

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SET 13 = 1.3.5.7.9.11.13.15.17.19.21

DISPIPARSE)=13

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*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-DRDER DECK.

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DECEMBER 27, 1979 NASTRAN 8/15/79 PAGE

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CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER WETHOD

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		-	+ 231	+F31A	RLOAD2	SPC1	TABLED1	+134	ENDDATA
	0840	COUNT	ښ •	52-	53-	177	55-	56-	

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

34 STARTING WITH ID *** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

	S AVG # O PREFACE LOOPS #	S AVG # PREFACE LOOPS #	S AVG PREFACE LOOPS #	S AVG PREFACE LOOPS =
**USER INFORMATION DESSAGE 3023—PARAMETERS FOR SYMMETRIC SECOMPOSITION CF DATA BLOCK LAWA **USER INFORMATION DESSAGE 3023—PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAWA **USER INFORMATION DESSAGE 3023—PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAWA **USER INFORMATION DESSAGE 3023—PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAWA **USER INFORMATION DESSAGE 3023—PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAWA **USER INFORMATION DESSAGE 3023—PARAMETERS FOR SYMMETRIC DECCAPOSITION OF DATA BLOCK LAWA **USER INFORMATION DESSAGE 3023—PARAMETERS FOR SYMMETRIC DECCAPOSITION OF DATA BLOCK LAWA **USER INFORMATION DESSAGE 3023—PARAMETERS FOR SYMMETRIC DECCAPOSITION OF DATA BLOCK LAWA **IME ESTIMATE	Ψ	000	000	0900
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NASTRAN COURSE --- DEMO, PROB. 11 MODAL FREQUENCY RESPONSE ANALYSIS

DECEMBER 27, 1979 NASTRAN 8/15/79

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PAGE

CANTILEVER BEAM WITH SINUSDIDAL LOAD - - - INVERSE POWER METHOD

FIGENVALUE ANALYSIS SUMMARY (INVERSE POWER METHOD)

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NUMBER OF EIGENVALUES EXTRACTED	NUMBER OF STARTING POINTS USED	NUMBER OF STARTING POINT MOVES	NUMBER OF TRIANGULAR DECOMPOSITIONS	TOTAL NUMBER OF VECTOR ITERATIONS .	REASON FOR TERRINATION	LARGEST OFF-DIAGONAL MODAL MASS TERM	%COOPE PAIR		NUMBER OF OFF-DIAGONAL MODAL MASS

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CANTILEVER BEAM WITH SINUSDIDAL LOAD - - - INVERSE POWER METHOD

NASTRAN COURSE - - - DEWO. PROB. 11 MODAL FREQUENCY RESPONSE ANALYSIS REAL EIGENVALUES

GENERALIZED STIFFNESS	2.742299E+01 2.180981E+02 8.563220E+02 2.433031E+03
GENERALIZED MASS	5.694814E-03 5.808597E-03 5.987773E-03 6.249210E-03
CYCLIC FREQUENCY	1.104429E+01 3.083972E+01 6.025770E+01 9.930736E+01
RADIAN FREQUENCY	6.93331E+01 1.937717E+02 3.736103E+02 6.239665E+02
EIGENVALUE	4.815432E+03 3.754747E+04 1.433458E+05 3.893342E+05
EXTRACTION ORDER	ক છ থ ←
MODE NO.	-004

METHOD 3 T , NBR PASSES = 1,EST. TIME = .0

WETHOD 1 T , NBR PASSES = 1, EST. TIME = ,1

NASTRAN UGUNSE — — DEMON PROB. 11 Modal Frequency Response analysis

DECEMBER 27, 1979 NASTRAN 8/15/79

PAGE

CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - INVERSE POWER METHOD

*** USER WARNING MESSAGE 2076, SDR2 DUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER MARNING MESSAGE 2078, SDR2 GUTPUT DATA BLOCK NO. 3 IS PURGED

METHOD 1 NT,NBR PASSES = 1,EST. TIME = .0
NETHOD 1 NT,NBR PASSES = 1,EST. TIME = .0

*** SYSTEM WARNING MESSAGE 3022

:S REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK DEFC1

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. DATA BLOCK DESCT œ

4 6 <i>t</i>					-05	-05	-05	40-	-04	E-05	-04	-04	-04	40-
8/15/79			83	0.	2.362413E-05 0.0	5.104215E-05 0.0	8.255996E-05 0.0	1.138303E-04 0.0	1.183373E-04 0.0	4.453895E 0.0	1.373059E-04 180.0000	3.729818E-04 180.0000	5.417783E-04 180.0000	5.842197E-04 180.0000
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NASTRAN COURSE MODAL FREQUENCY	CANTILEVER		POINT ID.	-	ю	ဟ	7	თ	Ξ	13	15	17	91	21

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NASTRAN COURSE - - - DEMO. PROB. 11 Modal Frequency Response analysis

CANTILEVER BEAM WITH SINUSCIDAL LOAD - - - INVERSE POWER METHOD FREQUENCY = 7.0000006+00

	R3	0.0	7.014669E-05 0.0	1.175837E-04 0.0	1,441499E-04 0.0	1.490565E-04 0.0	1,117749E-04 0.0	1,088970 E-05 180.0000	2.388203E-04 160.0000	5.085847E-04 180.0000	6.945060E-04 180.0000	7.403389E-04 180.0000
VECTOR	R2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	o. o. o	0.0 0.0	0.0	0.0
C E M E N T	£	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
D I S P L A C E M (MAGNITUDE/PHASE	13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
о т п х	12	0.0	3.703355E-04 0.0	1.327339E-03 0.0	2.052497E-03 0.0	4.140781E-03 0.0	5.4~3926E-03	6.0a1032E-03	4.920035E-03 C.0	1.167506E-03 0.0	4.986517E-03 183.0300	1,223423E-02 180,0000
U	1.1	0.0	1.049675E-19 180.0000	2.073502E-19 180.0000	3.046272E-19 180.0000	3.944031 E- 19 180.0000	4.744673E-19 180.0000	5.428484E-19 180.0000	5.978627E-19 180.0000	6.381557E-19 186.0000	6.627353E-19 180.0000	6.709963E-19 180.0000
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	POINT ID.	9-	n	ហ	7	6	-	13	5	1.7	61	2.

NASTRAN COURSE - - - DEMO. PROB. 11 Modal Prequency Response analysis

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DECEMBER 27, 1979 NASTRAN 8,15/79

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თ	ø	7.403415E-18 270.0000	4.0197188-02 90.0000	0.0	0.0	0.0	2. 14 4 5 1 5 1 5 5 5 5 5 5 5 5 5 5 5 5 5
-	Ø	3.906315E-18 270.0000	6.2 /7347E-02 90.0000	0.0	0.0	0.0	2.2.0405E-03 90.0000
13	ڻ ن	1.018921E-17 275.0000	7.94TB29E-02	0.0	o. o.	0.0	9.3453455-04 90.0000
t.	O	1.122289E-17 270.0000	7.2.2070E-02	0.0	o. o. o	0.0	2.588185E-03 270.0000
17	O	1.197694E-17 270.0000	2.4/9494E-02	0.0	0.0	0.0	7.030542E-03 270.0000
91	ø	1.244033E-17 270.0000	8.340140E-02	o.o o.o	0.0	0.0	1.62122dE-02 270.0000
21	()	1.259540E-17 270.0000	1.7.2329E-01 270.6000	0.0	0.00	0.0	1.101223E-62 270.0000

NASTRAN COURT - - - CINC. PROS. 11 MODAL REQUENCY RESPONSE ANALYSIS

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NASTRAN 8/15/79

DECEMBER 27, 1979

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3.085212E-03 90.0000 5.171599E-03 6.340044E-03 90.0000 6.555847E-03 90.0000 4.916117E-03 90.0000 4.7895405-04 1.050386E-02 270.0000 2.2368508-02 270.0000 3.0545.7E-02 270.0000 3.256444E-02 270.0000 0.0 82 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 V E C T C R ä 0.0 0.0 0.0 0.0 0.0 o. o. o 0.0 0.0 0. 0. 0 .. 0.0 WASNITUDE/PHASE) o.o 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 ж ы л т 50-3.0.0. 2.163944E-01 5.734275E-02 1.1.502 4E-01 1.821211E-01 80.0000 2.417674E-01 90.0000 2.5783748-01 93.0100 5.134954E-02 90.0000 2.15-389E-01 270.0000 5.383895E-01 270.0000 0 8. - 3. 2.086816E-17 270.0000 9.11-740E-18 270.0000 1.35 45:05-17 270.0000 :.734675E-17 270.0000 2.387572E-17 270.0000 2.629538E-17 270.0000 2.805756E-17 270.0000 2.914662E-17 270.0600 2.951195E-17 270.0000 000000 0 0 ¢ HO. ٠, 17 O O O O O O () G O POINT 10. ភ σ Ę, Š 17 9 2

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CANTILETER BEAT ALTH SINLSDIDAL LOAD - T - INLERSE POWER DETHOD FREQUENCY = 3.0000006+C0

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. 11 5	CANTILEVER BEAM WITH SINUSDIDAL LOAD INLERSE POWER WETHOD FREQUENCY = 7.0000000E+00	C C M P L E A L D A D W E C T D A (MACALTUDE PHASE)	.2 13	1.00000€+00 0.0 0.0
NASTRAN COURNG DENO, PROG. 11 MODAL PREQUENCY RESPONSE ANALYSIS	CANTILEVER BEAM WITH SINUSDIDAL . FREQUENCY = 7.000000E+00		POINT ID. TYPE 71	t6 G 0,0
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CANTILEVER BEAM WITH SINUSOIDAL LOAD + - - GIVENS METHOD

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TITLE=LASTRAY, CCURSE - - - DEMO, PROB. 11A

SUBTITLE=MORAL FREQUENCY RESPONSE ANALYSIS

UABEL=CANTILEVER BEAM WITH SINUSOIDAL LOAD - - GIVENS METHOD

SEC 11

SEC 11

FREQUENCY=33

SET 13= 1,3,5,7,9,11,13,15,17,19,21

OLSACHASE)=13

SET 13= 1,3,5,7,9,11,13,15,17,19,21

VELOCITY (PHASE) = 13

BESIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

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NASTRAN 8/15/79

CANTILEVER BEAM WITH SINUSDIDAL LOAD - - - GIVENS METHOD

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NASTRAN COURSE - - DEVO. PROG. 114 MODAL FREQUENCY RESPONSE ANALYSIS

8/15/79 NASTRAN 27, 1979 DECEMBER

> GIVENS METHOD CANTILEVER BEAM WITH SINUSUIDAL LOAD -

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..NO ERRGRS FOUND - EXECUTE NASTRAN PROGRAM..

*** SYSTEM INFORWATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

34 STARTING WITH ID

20) 0 S AVG 0 PREFACE LODPS LOCK KOO

SPILL GROUPS = PC GROUPS = ...
TIME = ... ***USER INFORMATION TESSAGE 3023--PARAMETERS FOR STYTETRIC DECOMPOSITION OF DATA BLOCK KOD TIME ESTIMATE: 1 C ALC = 1 PC AVG = 0 SPILL ADDITIONAL CORE: -26503 C TAX = 2 PCWAX = 0 PC 1,EST. TIME = C AV. = 1 PC AVG = C TAX = 2 PCVAX = 1.68 PVAX = PVA

248 S AVG 40) 0 0 0 PREFACE L *** USER INFORMATION MESSAGE 2016, GIVENS TITE ESTIMATE IS
6 SECONOS.
PROBLEM SIZE IS
40. SPILL WILL OCCUR FOR THIS CORE AT A PROBLEM SIZE OF "Z ***USER INFORMATION MESSAGE 3023--PARAWETERS FOR SYMMETRIC DECC.,POSITION OF DATA BLOCK MAA

TIME ESTINATE:

C AVG = 1 PC AVG = 0 SPILL

ST 100 2 NT, NBP PASSES = 1.EST. TIME = 101 NC, NBP PASSES = 1.EST. TIME = NETHOD 1 NC, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NETHOD 3 T, NBP PASSES = 1.EST. TIME = NBP PASSES = 1.EST. TIME

NASTRAN CCURSE – – DEMO. PROB. 11A MODAL FREQUENCY RESPONSE ANALYSIS

DECEMBER 27, 1979 NASTRAN 8/15/79

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CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD

EIGENVALUE ANALYSIS SUEMARY (GIVENS METHOD)

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NUMBER OF EISENVALUES EXTRACTED	NUMBER OF EIGENVECTORS COMPUTED	NUMBER OF EIGENVALUE CONVERSENCE FAILURES .	NUMBER OF EIGENVECTOR CONVERGENCE FAILURES.	REASON FOR TERMINATION	LARGEST OFF-DIAGONAL WODAL NISS TERM,	MODE PAIR		NUMBER OF OFFEDIADONAL WODAL WASS

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NASTRAN COURSE - - - DEMO. PROB. 11A MODAL FREQUENCY RESPONSE ANALYSIU

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GENERALIZED TASS		.6'8358E-0 .135542E-0 .857788E-0 .0 .0	000000000000000000000000000000000000000		TIME = .2 TIME = .1
CYCLIC FREQUENCY	. 767519E+0 . 104429E+7 . 083972E+0 . 025770E+0	4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.	8.42.20.20.20.20.20.20.20.20.20.20.20.20.20	8.745947.1403 9.4613571.403 1.0118.405.404 1.1241656.404 1.12088106.404 1.200736.404 1.200736.404 1.2636.006.404 1.2735156.404 1.28745.404 1.28745.404	A PASSES = 1, EST, .
70.27 (0.28	1,1100/56 - 01 6.3,1700/56 - 01 1,377176 - 02 3,78310 - 6+02 6,23 - 01,15 + 02	9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		5.44.74.5.404 6.34.74.5.404 6.34.74.5.404 6.74.205.404 7.35.107.5.404 7.35.107.5.404 7.595.105.6.404 7.99.1056.404 7.99.1056.404 8.04.14.76.404 8.04.14.76.404 8.04.14.76.404 8.08.14.76.404 8.08.14.76.404 8.08.14.76.404 17.14.76.404 8.08.14.76.404 8.08.17.76.404 17.76.76.404 8.08.17.76.404	SETHED 1 NT, NBF WETHED 1 T, NBF
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NASTRAN COURSE - - - DEMO, PROB. 11A MODAL FREQUENCY PESPONSE ANALYSIS CANTILEVER BEAM WITH SINUSOIDAL LOAD - - - GIVENS METHOD

*** USER WARNING MESSAGE 2076, SDR2 OUTPUT DATA BLOCK NO. 1 IS PURGED

*** USER WARNING MESSAGE 2078, SOR2 OUTPUT DATA BLOCK NO. 3 IS PURGED

METHOD 1 NT,NBR PASSES = 1,EST, TIME = METHOD 1 NT,NBR PASSES = 1,EST, TIME =

*** SYSTEM WARNING MESSAGE 3022

DATA BLOCK DEFCT - IS REQUIRED AS INPUT AND IS NOT CUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROLTE.

*** SYSTEM WARNING MESSAGE 3022

IS REQUIRED AS INPUT AND IS NOT QUIPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROLTE. DATA BLOCK DESC1 PAGE

CANTILEVER BEAM WITH SINUSGIDAL LOAD - - - GIVENS WETHOOFREQUENCY = 3.0300000E+00 ж ш л а с о о

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PAGE 8.181114E-04 180.0000 1.083911E-03 180.0000 1.574698E-03 1.592649E-03 1.421231E-04 2.718849£-04 180.0000 3.9341155-04 5.094536E-04 180.0000 6,4832855-04 180.0000 1.407358E-03 180.0000 NASTRAN 8/15/79 180,0000 0.0 DECEMBER 27, 1979 8 0.0 0.0 0.0 0.0 0.0 °.°° 0.0 0.0 0.0 œ VECTO o. o. D I S P L A C E M E N T (MAGNITUDE/PHASE) 0.0 0.0 0.0 0.0 0.0 o. o. 0.0 0. 0. 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 CANTILEZER BERM ALTH SINCSCIDAL COAD + - - GIVENS METHO FREQUENCY = 7.00000008+00 7.305132E-04 180.0000 2.802981E-03 180.0000 6.142323E-03 180.0000 1.05.1594E-02 180.0000 1.541437E-02 160.6000 2.370404E-02 180.0030 3.310563E-02 181.0000 4.540476E-02 6.00.9944E-02 7.558663E-02 180.0000 CHPLEX 0.0 0.0 NASTRAN COURSE - - - DEMO, PROG. 11A Modal Fiequency Response analysis 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 o. o. 3d X I O O Ø O O O O O O O O POINT ID. 3 9 5 <u>-</u> 2

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NASTAN COURTE - - - DEVO. PROB. 118 NOCAL FREUCRAY RESOCCISE ANALYSIS

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6.250901E-03 270.0000 1.195812E-02 270.0000 1.730314E-02 270.0000 2.240664E-02 270.0000 2.851498E-02 270.0000 3.5982425-02 270.0000 4.767288E-02 2-0.0000 7.004835E-02 270.0000 6.1.9884E-62 270.0000 6.925846E-02 270.0000 NASTRAN 8/15/79 0.0 82 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 œ VECTO ά 0. 0. 0. 0. 0. 0 0.0 0.0 0.0 0.0 0 ०. ०. ० 0. 0. 0 0.0 °.°° o. o V E L O C I T Y (MAGNITUDE/PHASE) 0.0 0.00 o. o. o 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 CANTILEDER BEAM ALTA NINGSCIDAL LOAD - - - CIVENG METHOD FREQUENCY = 7.0000000=+00 ы а ы 3,212,655E-02 270,0500 272.0000 272.0000 2.025.03E+00 270.0000 7.2194156-01 270.0000 1.4:6052E+00 270.0000 2.6.070'E+00 270.0000 3.37 8450E+00 270.0000 1.232818E-01 270.0000 2.7015346-61 270.0000 4.4.27716-01 270.0000 0 0 0 O NASTRAN COURTY - - - OSYOT PROB. 11A MODAL FREQUENTY RESPONSE ATALYSIS 0.0 0 0.0 0 0.0 0.0 °.0 0.0 0.0 °. 0.0 0 0 0 0.0 TYPE O ₹3 \circ (3 O O O O n O O POINT ID. Ψ, m ŧΩ t~ m 5 ŗ ٠ O 2

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DECEMBER 27, 1979 NASTRAN 8/15/79 NACIPAN UDURAF T = DEVO. PROB. 11A VODAL FREQUENCY RESPONSE ANALYSIS

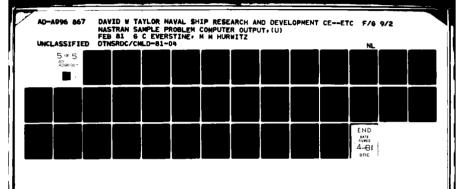
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NASTRAN 8/15/79 2, 1980 JANUARY

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NASTRAN COURSE - - - DEMO. PROB. 12 MODAL TRANSIENT ANALYSIS

INVERSE POWER METHOD

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TITLE=NASTRAN COURSE --- DEMO. PROB. 12
SUBTITLE=MODAL TRANSIENT ANALYSIS
LABEL=INVERSE POWER METHOD
SPC= 11
DLOAD=92
ISTEP=71
METHOD=41
SET 25 = 7,13,21
BISP=25
BEGIN BULK

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

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NASTRAN COURSE - - - DEMO. PROB. 12 MODAL TRANSIENT ANALYSIS

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NASTRAN COURSE - - - DEMO. PROB. 12 MODAL TRANSIENT ANALYSIS

JANUARY 2, 1980 NASTRAN 8/15/79

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INVERSE POWER METHOD

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NO ERRORS FOUND - EXECUTE NASTRAM PROGRAM

34 STARTING WITH ID *** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

ION MESSAGE 30: TIME ESTIMATE= DITIONAL CORE=	***USER INFORMATION MESSAGE 3023PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAMA TIME ESTIMATE: 1 C AVG = 4 PC AVG = 0 SPILL ADDITIONAL CORE: -23722 C MAX = 5 PCMAX = 0 PC	FOR SYMMETE C AVG = C MAX =	RIC DECOMP 5 5	OSITION OF DA PC AVG = PCMAX =	TA BL	OCK LAMA SPILL PC	<pre>< LAMA (N ≠ SPILL GROUPS = PC GROUPS =</pre>	900) S AVG PREFACE LOOPS	S AVG *
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ICN MESSAGE 3023. TIME ESTIMATE= DITIONAL CORE= -:	ATICN MESSAGE 3023PARAMETERS I TIME ESTIMATE= 1 ADDITIONAL CORE= -23722	FOR SYMMETE C AVG = C MAX = METHOD METHOD	SYMMETRIC DECOMPOSITION (AVG = 4 PC AV AAX = 5 PCM METHOD 1 NT, NBR PASSES = METHOD 3 T, NBR PASSES =	7 0 X	DATA BLOCK 0 S 1,EST. TIME	DATA BLOCK LAMA O SPILL O PC 1, EST. TIME =	CLAMA (N = SPILL GROUPS = PC GROUPS = NE = .2	900) S AVG PREFACE LOOPS	S AVG .

NASTRAN COURSE - - - DEMO. PROB. 12 MODAL TRANSIENT ANALYSIS

JANUARY 2, 1980 NASTRAN 8/15/79

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INVERSE POWER METHOD

(INVERSE POWER METHOD) SUMMARY ANALYSIS EIGENVALUE

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NASTRAN COURSE - - - DEMO. PROB. 12 MODAL TRANSIENT ANALYSIS

INVERSE POWER METHOD

MODE NO.

	GENERALIZED STIFFNESS	6.941055E-01 2.742921E+01 2.180975E+02 8.5433220E+02 2.433031E+03 5.712863E+03 1.193340E+04 4.264699E+04	
	GENERALIZED MASS	5.627785E-03 5.696105E-03 5.808580E-03 5.987773E-03 6.249210E-03 6.618173E-03 7.136382E-03 7.857858E-03	TIME =
EIGENVALUES	CYCLIC FREQUENCY	1.767519E+00 1.10429E+01 3.083972E+01 6.025770E+01 9.930736E+01 1.478693E+02 2.058094E+02 2.729493E+02 3.490483E+02	R PASSES = 1,EST. TIME TRIX PRODUCT R PASSES = 1,EST. TIME
REAL EIGE	RADIAN FREQUENCY	1.110565E+01 6.939331E+01 1.937717E+02 3.786103E+02 6.234665E+02 9.299901E+02 1.293132E+03 1.714991E+03 2.193135E+03	METHOD 3 T ,NBR PASSES = METHOD 1 NT,NBR PASSES = MAYADNULL MATRIX PRODUCT METHOD 1 NT,NBR PASSES = METHOD 1 NT,NBR PASSES =
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JANUARY 2, 1980 NASTRAN 8/15/79

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NASTRAN COURSE - - - DEMO. PROB. 12 MODAL TRANSIENT ANALYSIS

INVERSE POWER METHOD

*** USER WARNING MESSAGE 2078, SDR2 DUTPUT DATA BLOCK NO. 3 IS PURGED

METHOD 1 T , NBR PASSES = 1, EST. TIME =

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IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. *** SYSTEM WARNING MESSAGE 3022 DATA BLOCK DEF2

IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE.

DATA BLOCK DES2

VECTOR

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INVERSE POWER METHOD POINT-ID = 7

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- - - DEMO. PROS. 12 NASTRAN COURSE

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JANUARY 2, 1980 NASTRAN 8/15/79

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INVERSE POWER METHOD POINT-ID = 21

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* * END OF JOB * *

RIGID FORMAT SERIES P 5 5 5 2 2 MIMINTARTIN MMUTAN MWW.M 12/15/80 MMMM NY DESTRUCTION OF THE PROPERTY CDC CYBER SERIES LEVEL 17.5.7 NECTRACEM NUMBER MODEL 173 SYSTEM GENERATION DATE MMMMMM MMIMIN NICHT MANIMINIMINIMINIMI MARIAM ZW.Z N'N MMM MM X. Σ NO FORMER MMM NINIMININ W WWW MINISTRACTOR NAME OF THE PROPERTY OF THE PROPE /// White the control of the control MINISTERIO DE CONTROL MARKET COLORS AND CONTRACTOR AND CONTRACTOR AND COLORS CONTRACTOR WEBSTRONG REPORT TO A CONTROL OF THE PROPERTY --- NOT THE WASHINGTON TO A CONTROL OF THE PROPERTY OF THE PROPE PARTITION TO THE PARTITION OF A STATE COMMISSION OF A STATE OF A S MEM MEM MCCARACIA \$1.18.2.2.2M ATT MENTERS WINDS TO SERVICE ALC: THE PARTY OF THE MARKET THE TANK THE THE TANK THE TANK THE TANK THE TANK THE TANK T Estatus W MCD--DW M /// A A MARINA MARKATERA MM NTTH Minimage and an appropriate the control of the cont PRODUCTION OF THE PROPERTY OF MINIMARATATION OF THE TOTAL CONTROL OF THE TOTAL OTHER OF THE TOTAL OF MEAN MINIMINE CONTRIBUTION OF THE STATE OF T 12523----635330 N----//, medianis MINIM MIMIMINETARY COMMUNICATION CONTROL COMMUNICATION CONTROL CO MENN MINIMINIMINIM Management MARKATARAM City Control N. 3. ALC: THE PARTY V.V.V 5 Manage control THE COLUMN MERCHANTER STATE STATE OF STATE OF MANAGEMENT AND A STATE OF THE S

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CEND

PAGE

NASTRAN COURSE - - - DEMO, PROB. 13 NORMAL MODES WITH DIFFERENTIAL STIFFNESS ROTATING CANTILEVER BEAM (MELICOPTER BLADE)

CARD
COUNT
TITLE=NASTRAN COURSE - - - DEWO, PROB. 13
SUBTITLE=NASTRAN COURSE - - - DEWO, PROB. 13
LABEL=ROTATING CANTILEVER BEAM (HELICOPTER BLADE)
SPC = 11
SUCAD=ALL
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SUCAD=ALL
SUCASE 1
SUCAD=ALL

*** USER INFORMATION MESSAGE 207, BULK DATA NOT SCRTED, XSORT WILL RE-ORDER DECK.

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PAGE

NASTRAN COURSE --- DEVO. PROB. 13 NORMAL MODES AITH DIFFERENTIAL STIFFNESS

ROTATING CANTILEVEP BEAM (HELICOPTER BLADE)

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NASTRAN COURSE - - - DEMO. PROB. 13 Normal Addes with differential Stiffness

PAGE

NASTRAN 12/15/80

FEBRUARY 10, 1981

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

ø SPC1 11 ENDDATA CARD COUNT 51-

5

NASTRAN COURSE --- DEMO. PROB. 13 NORMAL MODES WITH DIFFERENTIAL STIFFNESS

S

PAGE

NASTRAN 12/15/80

FEBRUARY 10, 1981

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

LEVEL 2.0 NASTRAN DMAP COMPILER - SOURCE LISTING

89 *** USER POTENTIALLY FATAL MESSAGE 11.
POSSIBLE ERROR IN DMAP INSTRUCTION SSG1 INSTRUCTION NO.
DEFAULT OPTION FOR OUTPUT DATA BLOCKS - MAKE SURE MISSING BLOCKS ARE NOT REQUIRED.

NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM

34 STARTING WITH ID *** SYSTEM INFORMATION MESSAGE 3113, EMGPRO PROCESSING SINGLE PRECISION ELEMENTS OF TYPE

60) 0 S AVG = 0 PREFACE LOGPS = •••USER INFORMATION WESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KAA (N = 1 C AVG = 4 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE* -28488 C MAX = 5 PCMAX = 0 PC GROUPS =

MPYAD--NULL MATRIX PRODUCT
METHOD 2 NT,NBR PASSES = 1,EST. TIME =

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NASTRAN COURSE - - - DEMO. PROB. 13 NORMAL MODES WITH DIFFERENTIAL STIFFNESS ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

FEBRUARY 10, 1981 NASTRAN 12/15/80

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PAGE

*** USER INFORMATION MESSAGE 3035

FOR LOAD 1 EPSILON SUB E = -7.1805861E-13

*** USER INFORMATION MESSAGE 3035

FOR LCAD 2 EPSILON SUB E = 0.

MPYAD--NULL MATRIX PRODUCT METHOD 2 T ,NSR PASSES = 1,EST. TIME =

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FEBRUARY 10, 1981 NASTRAN 12/15/80 PAGE

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NASTRAN	NORMAL

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FEBRUARY 10, 1981 NASTRAN 12/15/80 PAGE

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	Ξ	989832E-0	.97965E-0	1.496950E+0	.995933E+0	. 494916E+0(0+3608E60	492883E+00	991866E+00	490849E+00	989832E+00	468816E+00	987799E+00	486782E+0	985765E+00	7.484749E+0	983732E+0	482715E+0	981698E+00	480681	989832
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	10.	~	ဗ	4	Ŋ	9	7	œ	6	0	=	12	13	14	15	16	17	18	19	20	21
	POINT																			-	- •

13	AL STIFFNESS
- DEMO. PR	DIFFERENTIAL
COURSE -	HIIM SECO
NASTRAN	NORMAL II

LINEAR STATIC SOLUTION

CONSTRAINT SINGLE-POINT O IT FORCES

2 0.0 73 2 0.0 71 -9.979665E+01 7 Y P.E. POINT 10.

83

2

0.0

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PAGE

FEBRUARY 10, 1981 NASTRAN 12/15/80

SUBCASE 1

***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK KBLL (N = TIME ESTIMATE: 1 C AVG = 4 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE: -28488 C MAX = 5 PCMAX = 0 PC GROUPS =

60) 0 S AVG = 0 PREFACE LOOPS =

NASTRAN COURSE - - - DEMO. PROB. 13 NORMAL MODES WITH DIFFERENTIAL STIFFNESS

ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

PARAMETER O L CONTENTS

DET

1.134664E+04

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ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

TABLE PARAMETER 0 CONTENTS

POWER

0

1.EST. TIME = METHOD 2 NT, NBR PASSES =

404

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ROTATING CANTILEVEP BEAM (HELICOPTER BLADE)

*** USER INFORMATION MESSAGE 3035

FOR LOAD 1 EPS! LON SUB E = -7.1805861E-13

*** USER INFORMATION MESSAGE 3035

FOR LOAD 2 EPSILON SUB E = 0.

WPYAD --NULL MATRIX PRODUCT WETHOD 2 T ,NBR PASSES = 1.EST. TIME =

٥.

*** USER WARNING MESSAGE 2076, SDR2 GUTPUT DATA BLOCK NG. 1 IS PURGED

FEBRUARY 10, 1981 NASTRAN 12/15/80 PAG	SUBCASE 2
NASTRAN COURSE DCWD, PROS. 13 Norwal modes with differential stiffness	STATIC DIFFERENTIAL STIFFNESS SOLUTION

PAGE

83 CONSTRAINT 0.0 ž 0.0 SINGLE-POINT 0.0 T1 T2 -9.979665E+01 0.0 и. О FORCES POINT ID. TYPE 1 G

NASTRAN COURSE - - - DEMO. PROB. 13 NORMAL MODES WITH DIFFERENTIAL STITFNE

NO	
SOLUTI	
STIFFNESS	
DIFFERTATIAL	
STATIC	

NASTRAN COURSE NORMAL MODES W	COUR	SE WITH DI	NASTRAN COURSE DEMO. PROB. 1 NORMAL MODES WITH DIFFERENTIAL STTTE	3 NESS			FEBRUARY 10, 1981	10.1	981	NASTRAN 12/15/80	PAGE
STATIC	JIFFE	RTNTTAL	STATIC DIFFER MITAL STIFFNESS SOLUTION	N O						SUECASE	8
				۵	ISPL	ACEMENT	VECTOR				
POINT	10.	TYPE	1.1		12	13	<u>α</u>		22	R3	
	_	g	0.0			0.0	0.0	0.0		0.0	
	7	_U	5.421374E-05	0.0		0.0	0.0	0.0		0.0	
	٣	ပ	1.081564E-04			0.0	0.0	0.0			
	4	g	9			0.0	0.0	0.0			
	5	g	2.141443E-04			0.0	0.0	0.0			
	9	IJ	2.656473E-04			o.c	0.0	0.0			
	7	IJ	3.157950E-04			0.0	0.0	0.0		0.0	
	00	g	3.643163E-04			0.0	0.0	0.0			
	6	g	4.109401E-04			0.0	0.0	0.0			
-	0	J	4.553954E-04			0.0	0.0	0.			
-	_	ڻ و	4.974110E-04			0.0	0.0	ن 0			
_	2	IJ	5.367160E-04			0.0	0.0	0.0			
-	5	IJ	5.730392E-04	٠		0.0	0.0	0.0			
-	4	IJ	6.061098E-04			0.0	0.0	0.0			
•	2	ڻ ن	6.356561E-04			0.0	0.0	0.0			
-	9	IJ	6.614076E-04			0.0	0.0	0.0			
-	17	J	3			0.0	0.0	0.0			
_	8	v	7.004415E-04			0.0	0.0	0.0			
-	Ç.	g	7			0.0	0.0	0.0			
.,	20	U	27			0.0	0.0	0.0			
.1	21	IJ	7.237534E-04	0.0		0.0	0.0	0.0			

NASTRAN COURSE NORMAL MODES W	COURS	MITH DIE	NASTRAN COURSE DEMO. PROB. NORMAL MODES WITH DIFFERENTIAL STIF	13 FNESS		FEBRUARY 10,	10, 1981	NASTRAN 12/15/80	PAGE
NATURAL	FREGL	ENCIES (NATURAL FREQUENCIES (WITH PRELDAD E	EFFECTS INCLUDED)				SUBCASE	E 3
				DISPLA	CEMENT V	E C 1 O R			
POINT	10.	TYPE	11	12	13	2	R2	83	
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	ო	U	0.0	0.0		0.0	0.0	0.0	
	4	U	0.0	0.0		0.0	0.0	0.0	
	ഹ	IJ	0.0	0.0	0.0	0.0	0.0	0.0	
	9	U	0.0	0.0		0.0	0.0	0.0	
	7	U	0.0	0.0	0.0	0.0	0.0	0.0	
	80	v	0.0	0.0		0.0	0.0		
	თ	IJ	0.0	0.0		0.0	0.0		
-	ပ္	IJ	0.0	0.0		0.0	0.0		
-	_	IJ	0.0	0.0		0.0	0.0		
•	2	IJ	0.0	0.0		0.0	0.0		
•	5	ŋ	0.0	0.0		0.0	0.0	0.0	
-	4	ŋ	0.0	0.0		0.0	0.0		
-	2	ŋ	0.0	0.0	0.0	0.0	0.0		
-	91	IJ	0.0	0.0		0.0	0.0	0.0	
-	1.7	IJ	0.0	0.0	0.0	0.0	0.0	0.0	
-	8	ن	0.0	0.0		0.0	0.0	0.0	
-	6	IJ	0.0	0.0		0.0	0.0	0.0	
.,	20	IJ	0.0	0.0		0.0	0.0	0.0	
\1	21	ၒ	0.0	0.0	0.0	0.0	0.0	0.0	

60) 0 S AVG = 0 PREFACE LOOPS = ***USER INFORMATION MESSAGE 3023--PARAMETERS FOR SYMMETRIC DECOMPOSITION OF DATA BLOCK LAWA (N = TIME ESTIMATE= 1 C AVG = 4 PC AVG = 0 SPILL GROUPS = ADDITIONAL CORE= -23722 C MAX = 5 PCMAX = 0 PC GROUPS = 0 PC

NASTRAN COURSE - - - DEMO. PROB. 13 NORMAL MODES WITH DIFFERENTIAL STIFFNESS

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ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

(INVERSE POWER METHOD) SUMMARY ANALKSIS EIGENVALUE

_	-	0	-	4	7		0	0	0
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S	POINTS USED	STARTING POINT MOVES	TRIANGULAR DECOMPOSITIONS	õ	TERMINATION	OFF-DIAGONAL MODAL		•	FF-DIAGONAL MODAL FAILING CRITERION
3	(3	(3	LA:	Ü	⊢	4	9	ב ב	ë e
⋖ >	STARTING	ž	വ	>	Ž	Ö	•	د	A Z
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6	P	Ö	G.	3	FOR				R OF O
α	œ	œ	œ	TOTAL NUMBER OF VECTOR ITERATIONS	Z	LARGEST			NUMBER OF OFF-DIAGONAL MODAL MASS TERMS FAILING CRITERION
ξ	ğ	S	<u>ω</u>	Ā	183	ပ္ထ			<u> </u>
NUMBER OF EIGENVALUES EXTRACTED	NUMBER	NUMBER	NUMBER	5	REASON	Ā			2

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NASTRAN COURSE --- DEMO. PROB. 13 NORMAL MODES WITH DIFFERENTIAL STIFFNESS ROTATING CANTILEVER BEAM (HELICOPTER BLADE)

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GENERALIZED STIFFNESS	1.312736E+00
GENERALIZED MASS	5.745887E-03
CYCL IC FREQUENCY	2.405639E+00
RADIAN FREQUENCY	1.511507E+01
EIGENVALUE	2.284654E+02
EXTRACTION ORDER	-
MODE NO.	-

METHOD 1 T ,NBR PASSES = ..EST. TIME =

°.

NASTRAN COURSE ~ - - DEMO. PROB. 13 NORMAL MODES WITH DIFFERENTIAL STIFFNESS

ROTATING CANTILEVEP BEAM (HELICOPTER BLADE)

DATA BLOCK PLIPAR IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. *** SYSTEM WARNING MESSAGE 3022

DATA BLOCK GPSETS IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. *** SYSTEM WARNING MESSAGE 3022

DATA BLOCK ELSETS IS REQUIRED AS INPUT AND IS NOT OUTPUT BY A PREVIOUS MODULE IN THE CURRENT DMAP ROUTE. *** SYSTEM WARNING MESSAGE 3022

NOSTRAN COURSE WITH DIFFERENTIAL STIFFNESS	200		5
NATURAL FREQUENCIES (WITH PRELOAD EFFECTS INCLUDED) EIGENVALUE = 2.284654E+02		SUBCASE 3	es M

	EIGENVALUE & 4.2840345+02	REAL	L E 1 G	ENVECT	z α ο		,
	TYPE 71	_	12	13	R	82	R3
	0.0		•	0.0	0.0	0.0	0.0
	1.603758E-20 4.	Q.		0.0	0.0	0.0	1.903171E-03
	3.197595E-20 1.	ST Oil		0.0	0.0	0.0	3.5996245-03
	4.771635E-20	41	153E-02 (0.0	0.0	0.0	5.108188E-03
	6.316205E-20 6.	90		0.0	0.0	0.0	6.445591E-03
	7.821702E-20 1.	7.1	_	0.0	0.0	0.0	7.625675E-03
	9.278851E-20 1.	83		0.0	0.0	0.0	8.664623E-03
	1.057866E-19	-		0.0	0.0	0.0	9.5711785-03
	1.201251E-19 2.	7		0.0	0.0	0.0	1.035687E-02
	1.327217E-19 2.	ø	_	0.0	0.0	0.0	1.103121E-02
	1.444993E-19	20	_	0.0	0.0	0.0	1.160297E-02
	1.553846E-19	(7		0.0	0.0	0.0	1.2080315-02
	1.653115E-19 4.	'n	•~	0.0	0.0	0.0	1.247105E-02
	1.742190E-19 5.	6	_	0.0	0.0	0.0	1.2782395-02
	1.820523E-19 5.	8		0.0	0.0	0.0	1.302354E-02
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1.887635£-19	5	.	0.0	0.0	0.0	1.320102E-02
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1.943113E-19	9	-	0.0	0.0	0.0	1.3323765-02
1 0.0 0.0 0.0 1. 1 0.0 0.0 0.0 1. 2 0.0 0.0 0.0 1.	1.986619E-19	•	1385-01 (0.0	0.0	0.0	1.340087E-02
0.0 0.0 0.0	2.0178876-19	2	-	0.0	0.0	0.0	1.344222E-02
0.0 0.0 0.0	G 2.036724E-19 9.32	9	_	0.0	0.0	0.0	1.345865E-02
	2.043016E-19 1.	8	000E+00 (0.0	0.0	0.0	t,346205E-02

FEBRUARY 10, 1981 NASTRAN 12/15/80 NASTRAN COURSE --- DEMO. PROB. 13 NORMAL MODES WITH DIFFERENTIAL STIFFNESS

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SUECASE 3

NATURAL FREQUENCIES (WITH PRELOAD EFFECTS INCLUDED)

EIGENVALUE = 2.284654E+02

F O R C E S O F S I N G L E -

RCES OF SINGLE-POINT CONSTRAINT

R3 -8.007588E-02 0.0 <u>~</u> 0. 13 0.0 T2 -9.721706E-02 TYPE G POINT ID.

* * * END OF JOB * *

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